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National Technical Information Service

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Current Awareness Service for
Toxic Substances (CATS)
Cumulative Report No. 1, Pt. 1

Arthur D. Little, Inc.

Prepared For
Environmental Protection Agency

December 1975

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PB 250 074

**CURRENT AWARENESS SERVICE
FOR
TOXIC SUBSTANCES (CATS)**



**CUMULATIVE REPORT NO. 1
PART I**

**OFFICE OF TOXIC SUBSTANCES
ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460**

DECEMBER 1975

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16. ABSTRACT This cumulative report contains 26 current awareness documents prepared biweekly from 26 August 1974 through 11 August 1975, during the first year of a two year project. The purpose of this project was to provide the Office of Toxic Substances (OTS), U.S. Environmental Protection Agency with information on new uses of existing chemical products and with information of obvious potential environmental concern for both new and existing chemical products. For each biweekly document a core list of approximately 80 journals was scanned for information of interest to OTS on more than 30 topics (compounds, classes of compounds, and subject areas, e.g., model ecosystems). Abstracts were prepared for all items selected and these abstracts were presented biweekly under the assigned topics. In addition, a "General Information" section was added to accommodate abstracts for topics not included in the original list of scanning topics. Biweekly subject indexes were cumulated for this annual compilation, and an author index was added.		
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FOREWORD

Cumulative Report No. 1 of the Current Awareness Service for Toxic Substances (CATS) covers the first year's service conducted for the Office of Toxic Substances (OTS) U.S. EPA under Contract No. 68-01-2694. The CATS is a scanning service of some 50 scientific journals, 30 trade journals, and reports of major federal, state, and local environmental agencies. Scanning topics comprise a list of some 30 to 40 chemicals, classes of chemicals, and general topics related to chemicals in the environment. Abstracts or summaries of items of interest were prepared, indexed by subject and author, and compiled into biweekly CATS Reports.

Mr. Ernest W. Stalder, Monitoring and Information Systems Branch, OTS, EPA, Washington, DC is the Project Officer.

Ms. Virginia Valeri, Literature Research Section, Arthur D. Little, Inc. Cambridge, MA is the Contract Manager.

EPA-560/7-75-003

CURRENT AWARENESS SERVICE
FOR
TOXIC SUBSTANCES

CUMULATIVE REPORT NO. 1
PART I

December 1975

Contract No. 68-01-2694

Office of Toxic Substances
Environmental Protection Agency
Washington, D.C. 20460

Ernest W. Stalder
Project Officer

Arthur D. Little, Inc.
Acorn Park
Cambridge, Mass. 02140

C-77355

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SCANNING TOPICS +

1. Acetonitrile
2. Acrylonitrile
3. Arsenic
- *4. Aryl phosphates (phenyl, cresyl, mixed phenyl-cresyl)
- *5. Asbestos
6. Benzidine, and salts (hydrochloride, sulfate)
7. Boron
8. Brominated biphenyls
9. 3,3'-Dichlorobenzidine
10. Dioxane
11. Ethyleneimine
12. Flame retardants
- *13. Fluorocarbons**
14. Haloethers
15. Hexachlorobenzene
16. Hexachlorobutadiene
- *17. Hydrazine, derivatives, and salts
(sym and unsym - dimethyl, monomethyl)
18. Isocyanates (organic)
(toluene diisocyanate, methylene bis(phenylisocyanate))
19. Liquefaction and gasification of coal
20. 4,4'-Methylenebis (2-chloroaniline) (MOCA)
21. Model Ecosystems
(Environmental Fate Testing, Microecosystems)
22. Naphthylamines (alpha, beta, N-phenyl derivatives)
23. Nitrilotriacetic acid (NTA)
- *24. Optical brighteners
(fluorescent whitening agents, fluorescent dyes)
25. Perchloroethylene
- *26. Phthalates (dioctyl, di-2-ethylhexyl)
27. Polyurethanes
28. beta-Propiolactone
29. Trichloroethylene
30. Shale oil extraction and refining
31. Vinyl chloride
- *32. Vinylidene chloride**
- *33. Ethylene dibromide***

* - Automatic Acquisition (** added during progress of the project)

*** - Added to list of Scanning Topics in April 1975

+ - Within each Biweekly Report abstracts on the above listed topics appear in the order given

JOURNALS SCANNED

JOURNALS

PERIOD OF COVERAGE

Aerosol Age	August 1974 thru July 1975
Agricultural & Biological Chemistry Journal	May thru Nov. 1974
Air Pollution Control Assoc. Journal	Aug. 1974 thru July 1975
Aiche Journal	Sept. 1974 thru July 1975
Amble	Vol. 3, Nos. 1 thru 6, 1974; Vol. 4, Nos. 1 thru 4, 1975
J. of the American Chemical Society	21 Aug. and 18 Sept. 1974; 2 Oct. 1974 thru 23 July 1975
American Dyestuff Reporter	Aug. 1974 thru July 1975
American Industrial Assoc. J.	Aug. 1974 thru July 1975
American J. of Public Health	Oct., Nov., Dec., 1974; Feb., Mar., May 1975
American Medical Assoc. J.	Aug. thru Dec. 1974 (except 7 and 14 Oct. 1974); Jan. thru Apr. 1975
Analytical Biochemistry	July, Sept., Oct., 1974; Jan., Feb., 1975
Analytical Chemistry	Aug. 1974 thru July 1975
Annals of Occupational Hygiene	Aug., Dec. 1974; Feb. 1975
Anti-Corrosion-Methods & Materials	June 1974 thru Apr. 1975; June-July 1975
Archives of Environmental Contamination and Toxicology	Vol. 2, Nos. 2 and 3, 1974; Vol. 3, No. 1, 1975
Archives of Environmental Health	Aug. 1974 thru July 1975
Journal of the Assoc. Official Anal. Chemists	July 1974 thru May 1975
Atmospheric Environment	Aug. thru Dec. 1974; Jan. thru July 1975 (except March 1975)
Biochemistry	30 July thru 31 Dec. 1974 (except 10 Sept. 1974); 14 Jan. thru 29 July 1975 (except 22 Apr. 1975)
Bioinorganic Chemistry	Vol. 3, No. 4, 1974; Vol. 4, No. 1, 1974; Vol. 4, No. 2, 1975
Biogeochemistry	Vol. 3, Nos. 2 thru 4, 1974
Biotechnology & Bioengineering	July 1974 thru June 1975
Bull. of Environmental Contamination and Toxicology	July thru Nov. 1974; Jan. thru June 1975
Cancer Research	Aug. thru Nov. 1974; Jan. thru July 1975 (except March 1975)
Chemical and Engineering News	Sept., Nov., Dec., 1974; Jan. thru July 1975
Chemical Engineering	19 Aug. thru 23 Dec. 1974 (except 16 Sept. 1974); 6 Jan. thru 21 July 1975 (except 20 Jan. and July 1975)
Chemical Engineering Progress	Aug. 1974 thru July 1975
Chemical Reviews	Aug., Dec., 1974; Feb., Apr., June, 1975
Chemical Week	24 July thru Dec. 1974 (except 11 and 18 Sept., and 25 Dec. 1974); 1 Jan. thru 30 July 1975 (except 16 Apr. 1975)
Chemistry	Sept. 1974 thru Aug. 1975
Chemistry and Industry	6 July thru 21 Dec., 1974; 16 Aug. thru 6 Dec. 1975
Chemosphere	Oct. 1974 thru June 1975
Clinical Toxicology	Vol. 7, Nos. 2 thru 6, 1974
Coal Age	Aug. thru Dec. 1974; Jan., Apr. thru July 1975
Combustion	Aug. 1974 thru June 1975
Combustion and Flame	Aug. 1974 thru June 1975
Combustion Science & Technology	Vol. 8, Nos. 5 and 6, Vol. 9, Nos. 1 and 2, 1974; Vol. 10, Nos. 1 thru 6, 1975
Corrosion	Aug. 1974 thru July 1975
Critical Reviews in Environmental Control	Vol. 4, Nos. 1 and 3, 1974
Environmental Health Perspectives	Vol. 9, Dec. 1974; Vol. 10, Apr. 1975; Vol. 11, June 1975
Environmental Pollution	Jan., Feb., Apr., June, July, Nov., Dec., 1974
Environmental Research	June 1974 thru June 1975
Environmental Science & Technology	Aug., 1974 thru July 1975
Farm Chemicals (Formerly Agricultural Chems.)	Aug. thru Dec. 1974
Fire Journal	Nov. 1974 thru July 1975
Food & Cosmetics Toxicology	Aug. 1974 thru June 1975
Household and Personal Ind. Prods. (Formerly Detergents & Specialties)	July thru Dec. 1974 (except Oct. 1974); Jan. thru July 1975
Hydrocarbon Processing	Aug. 1974 thru July 1975 (except Feb. 1975)
Industrial Water & Wastes	Sept. 1974 thru Feb. 1975
International J. of Cancer	Aug. 1974 thru June 1975
Journal of Agricultural & Food Chemistry	July 1974 thru June 1975
Journal of Experimental Biology	June, Aug., Oct., Dec., 1974
Journal of Experimental Marine Biology and Ecology	May thru Sept., Dec. 1974; Jan., March thru June 1975
Journal of Occupational Medicine	Jan., Feb., Mar., 1974; Jan. thru Apr. 1975
Journal of Paint Technology	Aug. 1974 thru July 1975 (except Oct. 1974)
Journal of Reproduction & Fertility	Apr. thru Nov. 1974; Jan., Feb. 1975
Journal of Polymer Science	Sept. 1974 thru July 1975
Journal of Toxicology & Environmental Health	Sept., Nov., 1975
Lancet	17 Aug. 1974 thru 26 July 1975 (except 24 Aug. and 7 Dec. 1974)
Marine Pollution	Apr. thru Oct. 1974; Jan. 1975
Metal Progress	Aug., Sept., Oct., 1974; Mar., Sept., 1975
Mining Congress Journal	Aug. thru Nov. 1974
Modern Packaging	Aug. 1974 thru July 1975 (except Nov. 1974 and Jan. 1975)
Modern Plastics	Aug. 1974 thru July 1975
Mutation Research	July 1974 thru June 1975
National Cancer Institute Journal	July 1974 thru July 1975
Nature	2 Aug. 1974 thru 31 July 1975
Pollution Engineering	Oct. 1974 thru July 1975
Quarterly Review of Biology	Vol. 49, Nos. 2 thru 4, 1974; Vol. 50, No.1, 1975
Residue Reviews	Vol. 31, 1974
Reviews in Analytical Chemistry	Vol. 11, Nos. 1 and 2, 1974
Rubber Age	Aug. 1974 thru July 1975
Science	9 Aug. 1974 thru 25 July 1975 (except 20 and 27 Dec. 1974; 3, 10, and 17 Jan. 1975)
Soap, Cosmetics & Chem. Specialties	July 1974 thru July 1975 (except Dec. 1974)
TAPPI	Aug., Oct., Nov., 1974; Apr., Aug., Oct., Nov., 1975
Tenside (Detergents)	Vol. 11, Nos. 3 thru 6, 1974
Teratology	June 1974 thru June 1975
Textile Chemist & Colourist	Aug. 1974 thru July 1975
Textile World	Aug. 1974 thru July 1975 (except Nov., Dec. 1974)
Toxicology and Applied Pharmacology	July thru Nov. 1974; Jan. thru May 1975
Water & Wastes Engineering	Nov. 1974; Jan., Mar., 1975
Water Pollution Control Federation Journal	Aug. 1974 thru July 1975
Water Research	Aug., Sept., Nov., Dec., 1974; Jan., Apr. thru July 1975
Wood & Wood Products	Aug. 1974 thru July 1975 (except Oct. 1974 and June 1975)

JOURNAL ABBREVIATIONS *

A.G.A. Monthly	American Gas Association Monthly
Air/Water Pollut. Rept.	Air and Water Pollution Report
Amer. Dyest. Rept.	American Dyestuff Reporter
Amer. Ind. Hyg. Assoc. J.	American Industrial Hygiene Association Journal
Amer. J. Pathol.	American Journal of Pathology
Amer. J. Physiol.	American Journal of Physiology
Amer. Rev. Resp. Disease	American Review of Respiratory Disease
Anal. Chem.	Analytical Chemistry
Anesthesia & Analgesia.	Anesthesia and Analgesia, Current
Current Res.	Researches
Anal. Chimica Acta	Analytica Chimica Acta
Ann. Occup. Hyg.	Annals of Occupational Hygiene
Anti-Corros. Methods Mater.	Anti-Corrosion Methods and Materials
Arch. Environ. Contam.	Archives of Environmental Contamination and
Toxicol.	Toxicology
Arch. Biochem. Biophys.	Archives of Biochemistry and Biophysics
Arch. Dermatol.	Archives of Dermatology
Atmos. Environ.	Atmospheric Environment
Arch. Environ. Health	Archives of Environmental Health
Arch. Pathol.	Archives of Pathology
Biochem. Biophys. Res.	Biochemical and Biophysical Research
Communications	Communications
Biochem. Pharmacol.	Biochemical Pharmacology
Biotechnol. Bioeng.	Biotechnology and Bioengineering
Brit. J. Cancer	British Journal of Cancer
Brit. Med. J.	British Medical Journal
Brit. J. Ind. Med.	British Journal of Industrial Medicine
Brit. J. Dermatology	British Journal of Dermatology
Brit. J. Haematology	British Journal of haematology
Bull. Environ. Contam.	Bulletin of Environmental Contamination and
Toxicol.	Toxicology
Bull. N.Y. Acad. Med.	New York Academy of Medicine. Bulletin
Can. Anaesth. Soc. J.	Canadian Anaesthetists/Society Journal
Can. Chem. Proc.	Canadian Chemical Processing
Cancer Res.	Cancer Research
Chem. Biol. Interactions	Chemico-Biological Interactions
Chem. Eng.	Chemical Engineering
Chem. Eng. News	Chemical and Engineering News
Chem. Ind.	Chemistry and Industry
Chem. Eng. Progr.	Chemical Engineering Progress
Chem. Revs.	Chemical Reviews
Chem. Wk.	Chemical Week
Clinical Toxicol.	Clinical Toxicology
Colo. Sch. Mines,	Colorado. School of Mines, Mineral Industries
Minerals Ind. Bull.	Bulletin.

*Includes some journals not on core list of journals scanned

Combust. Flame
Combust. Sci. Technol.
Contam. Contr./Biomed. Environ.
Critical Rev. Environ. Contr.

Combustion and Flame
Combustion Science and Technology
Contamination Control/Biomedical Environments
Critical Reviews in Environmental Control

Energie and Tech.
Environ.
Env.
Environ. Affairs
Environ. Health Letter
Environ. Health Perspect.
Environ. Letters
Environ. Pollut.
Env. Rept.
Environ Rept.
Env. Res.
Environ. Res.
Environ. Sci. Technol.
Eur. Plastics News
Exptl. Cell Res.

Energie Und Technik
Environment
Environment
Environmental Affairs
Environmental Health Letter
Environmental Health Perspectives
Environmental Letters
Environmental Pollution
Environment Report
Environment Report
Environmental Research
Environmental Research
Environmental Science and Technology
European Plastics News
Experimental Cell Research

Fed. Proc.
Fed. Regist.
Fed. Reg.
Fire J.
Folia Pharmacol. Japonica
Food Cosmet. Toxicol.

Federation Proceedings of American
Societies for Experimental Biology
Federal Register
Federal Register
Fire Journal
Folia Pharmacol. Japonica
Food and Cosmetics Toxicology

Govt. Repts. Announc.

Government Reports Announcements

HAPPI
Hydrocarbon Process.

Household and Personal Products Industry
Hydrocarbon Processing

Intern. J. Environ. Studies
Int. Arch. Arbeitsmed.
Int. J. Cancer

International Journal of Environmental Studies
Internationales Archiv fuer Arbeitsmedizin
International Journal of Cancer

J. Agr. Food Chem.
J. Air Pollut. Contr. Ass.
JAPCA
J. Amer. Chem. Soc.
J. Amer. Med. Ass.
J. Amer. Vet. Med. Assoc.

Journal of Agricultural and Food Chemistry
Air Pollution Control Association. Journal
Air Pollution Control Association. Journal
American Chemical Society, Journal
American Medical Association. Journal
American Veterinary Medical Association. Journal

J. Hyg., Epidemiology Microbiol., Immunology	Journal of Hygiene, Epidemiology, Microbiology and Immunology
J. Nat. Cancer Inst.	U.S. National Cancer Institute. Journal
J. Chromatography	Journal of Chromatography
J. Dent. Res.	Journal of Dental Research
J. Environ. Quality	Journal of Environmental Quality
J. Exp. Marine Biol. Ecol.	Journal of Experimental Marine Biology and Ecology
J. Occup. Med.	Journal of Occupational Medicine
J. Paint Technol.	Journal of Paint Technology
J. Pharmacol. and Exptl. Therapeutics	Journal of Pharmacology and Experimental Therapeutics
J. Pharm. Sci.	Journal of Pharmaceutical Sciences
J. Polym. Sci.	Journal of Polymer Science
J. Polym. Sci. (Polymer Ltrs. Ed.)	Journal of Polymer Science: Part B: Polymer Letters
J. Polym. Sci. (Polymer Phys. Ed.)	Journal of Polymer Science: Part A-2: Polymer Physics
J. Testing and Evaluation	Journal of Testing and Evaluation
J. Water Pollut. Contr. Fed.	Water Pollution Control Federation Journal

Land and the Environ.

Land and the Environment

Marine Fisheries Rev.	Marine Fisheries Review
Mar. Pollut. Bull.	Marine Pollution Bulletin
Metal Progr.	Metal Progress
Med. J. Aust.	Medical Journal of Australia
Mod. Packag.	Modern Packaging
Mod. Plast.	Modern Plastics
Mutat. Res.	Mutation Research
New Eng. J. Med.	New England Journal of Medicine
Nutr. Revs.	Nutrition Reviews

Pollut. Eng.
Proc. Nat. Acad. Sci.

Pollution Engineering
National Academy of Sciences, Washington, D.C.
Proceedings

Sat. Rev.
Sci. & Govt. Rept.
Sci. News
Sci. Total Environ.
Soap, Cosmet. Chem. Spec.
South Africa Med. J.

Saturday Review
Science and Government Report
Science News
Science of the Total Environment
Soap, Cosmetics and Chemical Specialties
South African Medical Journal

TAPPI

Text. Chem. Color.
Text. World
Toxicol. Appl. Pharmacol.

Water Res.
Water and Wastes Eng.
Wood & Wood Prods.
WHO

Zentbl. ArbMed. Arbschutz.

Technical Association of the Pulp and
Paper Industry

Textile Chemist and Colorist
Textile World
Toxicology and Applied Pharmacology

Water Research
Water and Wastes Engineering
Wood and Wood Products
World Health Organization

Zentralblatt Fuer Arbeitsmedizin und
Arbeitsschutz

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- 17-0001 ACETONITRILE, intramolecular hydrogen bonding
- 17-0002 ACETONITRILE, toxicity of bis(p-chlorophenyl)acetonitrile to frog tadpoles
- 5-0010 6-ACETOXY-2,4-DIMETHYL- α -DIOXANE, carcinogen in rats
- 12-0001 2-ACETYLAMINOFLOURENE, OSHA emergency standard in effect
- 18-0043 ACOUSTIC SURVEY? may locate suspended particulate matter in ocean
- 25-0001 ACRYLONITRILE, and other chemicals, toxic effects under study by various chemical companies
- 15-0001 ACRYLONITRILE, astronomers report its presence in interstellar space
- 20-0001 ACRYLONITRILE, big-volume hazardous commodity under study re new chemical transportation rules
- 17-0003 ACRYLONITRILE, capacity and market share for 1974 and 1978 for seven major petroleum companies
- 11-0001 ACRYLONITRILE, component of two new modifiers for epoxy, polyester and urethane resins
- 16-0001 ACRYLONITRILE, demand for in fiber use has dropped
- 23-0001 ACRYLONITRILE, engineering and cost study of air pollution control in manufacture of
- 24-0001 ACRYLONITRILE, FDA clears it for use in soft-drink bottles
- 18-0001 ACRYLONITRILE, grafting copolymer for wood fibers
- 19-0001 ACRYLONITRILE, growth rates of 10%/yr or more predicted for next 10 or more years
- 3-0002 ACRYLONITRILE, hazards to animals
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- 23-0002 ACRYLONITRILE, long-term exposure effects study to be conducted by Manufacturing Chemists Association for eight companies
- 24-0001 ACRYLONITRILE, marine pollutant
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- 24-0001 ACRYLONITRILE, migration problem in food-contact articles raises question of potential health hazard
- 10-0002 ACRYLONITRILE, mortality experience of workers exposed to low levels of it in an industrial vinyl chloride environment
- 25-0031 ACRYLONITRILE, new copolymer may be adsorbent material for diapers and surgical dressings or thickening agent in cosmetics and oil-well drilling muds
- 18-0001 ACRYLONITRILE, new uses (tertiary oil recovery, barrier resins, etc.) indicate demands for acrylonitrile exceeding current world capacity
- 19-0001 ACRYLONITRILE, not currently considered a potential hazard as a marine pollutant
- 14-0017 ACRYLONITRILE, potential aquatic environmental hazard in spills
- 3-0004 ACRYLONITRILE, production
- 4-0001 ACRYLONITRILE, production capacity of Monsanto's U.S. facilities to more than double to over one billion lbs/yr
- 4-0002 ACRYLONITRILE, production for December 1974 was much lower than for December 1973 but year's total production was slightly higher than 1973
- 19-0002 ACRYLONITRILE, production increase should result from new Monsanto ammonia plant
- 14-0001 ACRYLONITRILE, replacement of by pitch in graphite fiber production
- 10-0001 ACRYLONITRILE, spill hazards and management
- 3-0003 ACRYLONITRILE, structure-activity relationships for ulcerogenic effects
- 9-0001 ACRYLONITRILE, test program to start for study of its potential biological hazards
- 26-0001 ACRYLONITRILE, toxicity and biochemical effects, rat
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- 4-0003 N-ACETYLDMIDAZOLES, new class of perborate activators for laundry bleaching
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- 14-0035 ADHESIVES, price label backings may be cause of asthma among meat-wrapping personnel
- 20-0052 ADIPONITRILE CARBONATE, new chemical compound reacts with hydroxyl and amino groups to yield urethanes and ureas, respectively
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- *15-0027 AEROSOLS, generated by spray cans -- atypical cells in sputum of frequent aerosol users
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- 4-0050 AIR POLLUTION, deaths and health hazards
- 15-0038 AIR POLLUTION, effects on the structure and function of temperate forest ecosystems
- 4-0046 AIR POLLUTION, health hazards and cost effects, NAS
- 17-0049 AIR POLLUTION, new concepts in research
- 15-0055 AIR POLLUTION, social, economic, and health effects
- 7-0062 AIR POLLUTION CONTROLS, court finding spells need for specificity of monitoring procedures
- 5-0026 ALKYLATING AGENTS, carcinogenic activity

*Number preceding the hyphen identifies the CATS Biweekly Report; number following the hyphen identifies the abstract within the report.

Ref. No.

- *23-0007 ALLYL ISOTHOCTANATE, suggested deterrent for addition to aerosol sprays to prevent "sniffing"
- 4-0015 ALUMINA TRIMETHATE, flame retardants, production
- 1-0047 ALUMINUM COMPOUNDS, air pollutants
- * 3-0016 AMBIENT AIR QUALITY STANDARDS, New Mexico
- 17-0041 AMINE COMPOUNDS, potential carcinogens and mutagens from hair dyes
- 7-0030 ARROWIA FROM COAL, feedstock requirements
- 7-0031 ARROWIA FROM COAL, economic breakaway point
- 4-0015 ARSENIUM FLUOROBATE, flame retardant
- 11-0008 ARSENIUM SULFATE, flame retardant effects on particulates from wood fires
- 11-0033 ANALYTICAL INSTRUMENTATION, for detection of chlorine in water or wastewater and of trace metals in water
- 25-0004 ANTIMONY, analytical media for airborne particulates
- 25-0003 ANTIMONY, trace element in ASTM type A jet fuel
- 4-0016 ANTIMONY OXIDE, flame retardant, availability
- 5-0013 ANTIMONY OXIDE, flame retardant for cotton/modacrylic blend fabrics
- 9-0020 ANTIMONY OXIDES, in short supply
- 4-0015 ANTIMONY TRIOXIDE, flame retardants, production
- 25-0025 AQUATIC ECOSYSTEMS, modeling dynamics of biological and chemical components of
- 14-0050 AQUATIC HERBICIDES, control of water weeds
- 14-0050 AQUATIC HERBICIDES, potential effects on aquatic and terrestrial organisms
- 20-0046 AQUATIC LIFE, effects of chemicals on
- 4-0036 ARC-COAL-ACETYLENE, potential feedstock for vinyl chloride
- 5-0042 ARENE OXIDES, relevancy to cytotoxicity and carcinogenicity of aromatic compounds
- * 4-0009 AROMATIC AMINES, carcinogens
- 17-0004 AROMATIC AMINES, new studies on occupational carcinogenicity
- 24-0045 AROMATIC POLYESTER PLASTICS, new resins offer attractive mechanical, electrical, wear, and high-temperature properties
- 2-0003 ARSENIC, absorption by humans
- 21-0001 ARSENIC, alleged carcinogen, faces tough OSHA workplace exposure standards
- 13-0004 ARSENIC, among examples of potentially hazardous chemicals cited as need for passage of toxic substances control bill
- 16-0002 ARSENIC, among potentially hazardous chemicals for which chemical industry is developing computer-based health files
- 25-0006 ARSENIC, among potentially hazardous chemicals for which chemical industry is developing computer-based health files
- 9-0002 ARSENIC, analysis
- 8-0005 ARSENIC, analysis in biological fluids
- 2-0004 ARSENIC, analysis in hair
- 3-0011 ARSENIC, analysis in natural waters
- 5-0004 ARSENIC, analysis in soils
- 1-0004 ARSENIC, analysis in water
- 18-0004 ARSENIC, analysis of micropollutants in ground and surface waters
- 25-0004 ARSENIC, analytical media for airborne particulates
- 15-0006 ARSENIC, analytical procedure for determining content of in fish and shellfish tissue
- 9-0004 ARSENIC, analytical techniques for determination in fly ash
- 15-0004 ARSENIC, analytical techniques for measuring and monitoring in water supplies
- 18-0006 ARSENIC, approximately 1.5 million workers exposed to inorganic, potential carcinogen
- 9-0003 ARSENIC, aquatic ecosystem
- 4-0005 ARSENIC, biliary excretion
- 3-0005 ARSENIC, bioavailability, fish
- 3-0012 ARSENIC, biological conversion to toxic products in air and water
- 15-0002 ARSENIC, biological cycle
- 13-0005 ARSENIC, biological hazard and potential carcinogen
- 15-0002 ARSENIC, biological methylation of in the environment
- 3-0012 ARSENIC, biomagnification
- 3-0008 ARSENIC, carcinogen in humans
- 1-0007 ARSENIC, carcinogenicity of
- 9-0002 ARSENIC, chemistry and toxicology
- 10-0003 ARSENIC, clinical, toxicological and pathological effects on pigs fed arsenic acid in diet
- 3-0007 ARSENIC, commercial production in U.S.
- 15-0003 ARSENIC, concept of formal oxidation numbers in biological cycle could lead to misleading application
- 9-0005 ARSENIC-CONTAMINATED ORES, and arsenic in fossil fuels, potential sources of arsine
- 26-0004 ARSENIC, contamination of well water from 30-year old buried waste hospitalizes several people
- 9-0002 ARSENIC, cultural contributions to the environment
- 16-0006 ARSENIC, despite conflicting evidence, consensus is that arsenic is a lung carcinogen
- 2-0002 ARSENIC, detection in air, water, biological media
- 21-0002 ARSENIC, detection in paints by X-ray fluorescence systems
- 11-0002 ARSENIC, determination of trace level quantities by novel kinetic method
- 24-0003 ARSENIC, differentiation of various chemical species of arsenic present in a system under study possible by use of gas chromatography
- 9-0003 ARSENIC, distribution, accumulation, and degradation of arsenical herbicide in aquatic ecosystem
- 19-0003 ARSENIC, distribution of in surface sediments and in sediment cores from Puget Sound
- 7-0007 ARSENIC, effects of chemical composition on toxicity
- 15-0040 ARSENIC, effluent from geothermal power plant
- 7-0003 ARSENIC, elemental composition, airborne particulate
- 7-0005 ARSENIC, environmental review
- 9-0004 ARSENIC, environmental significance of as trace element in fly ash from coal-fired plant
- 18-0003 ARSENIC, evaporation mechanism
- 16-0004 ARSENIC, exposure hazards of people living near copper smelter
- 10-0005 ARSENIC, factory fume emissions investigated
- 6-0001 ARSENIC, fate in rat after i.v. administration
- 26-0005 ARSENIC, Finnish oil waste now back in storage in Finland after plans to dump it in South Atlantic were thwarted
- 1-0006 ARSENIC, health hazard
- 7-0006 ARSENIC, health hazard to workers
- 5-0005 ARSENIC, human carcinogen
- 2-0005 ARSENIC, in food
- 5-0001 ARSENIC, in hair from open cast metal mining

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- 22-0001 ARSENIC, in hard rock ores, as a water polluter
5-0003 ARSENIC, in soils
15-0004 ARSENIC, in water supplies
16-0004 ARSENIC, increased levels in hair and urine of children living near copper smelter
26-0003 ARSENIC, industrial residues are potential hazard to groundwaters
15-0005 ARSENIC, industrial safety data sheet
15-0007 ARSENIC, industry spokesman terms OSHA standards "ridiculous"
25-0007 ARSENIC, its absorption and its relation to cancer
6-0001 ARSENIC, kinetics of excretion via bile, in rats
1-0001 ARSENIC, marine pollutant
13-0007 ARSENIC, mechanism of arsenate inhibition of the glucose active transport system in *Neurospora crassa*
25-0031 ARSENIC, mortality experience of workers exposed to it as well as to vinyl chloride
25-0035 ARSENIC, mortality studies of workers exposed to it as well as to vinyl chloride over long periods
8-0004 ARSENIC, multiple basal cell carcinoma in the fetal period
5-0005 ARSENIC, new health standard
17-0004 ARSENIC, new studies on occupational carcinogenicity
10-0029 ARSENIC, NIOSH calls for "no detectable limit"
25-0005 ARSENIC, NIOSH lowers workplace exposure to 0.002 mg/cu m air as time-weighted average for 10-hr day
18-0006 ARSENIC, NIOSH now seeks to lower worker exposure limits to 0.002 mg/cu m of air over any 15-minute period
8-0003 ARSENIC, NIOSH recommends no-detectable limit be set for use in the workplace
4-0004 ARSENIC, occupational safety standards
12-0001 ARSENIC, OSHA preparing standard for
13-0006 ARSENIC, OSHA proposes stiff worker-exposure standard for inorganic arsenic compounds
13-0004 ARSENIC, OSHA proposes to reduce exposure limits to maximum of 0.004 mg/cu m with action level of 0.002 mg/cu m
16-0006 ARSENIC, OSHA to start hearings on proposed standards for exposure to
8-0003 ARSENIC, OSHA workplace exposure standards to be proposed
12-0002 ARSENIC, particulate emissions from ore smelter
26-0003 ARSENIC-PHOSPHORUS relationships in soils
15-0005 ARSENIC, physical properties and uses
16-0003 ARSENIC, poisoning in cattle and associated public health hazards
3-0006 ARSENIC, potential carcinogen to humans
13-0003 ARSENIC, potential cause of lung cancer in Rhodesian gold miners
26-0002 ARSENIC, potential lung carcinogen for people living near copper, lead, and zinc smelters
7-0007 ARSENIC, potential lung or lymphatic carcinogen
16-0004 ARSENIC, potential respiratory carcinogen
10-0006 ARSENIC, potential synergistic effect of diethylnitrosamine in carcinogenicity
9-0002 ARSENIC, potential threat to the environment
19-0005 ARSENIC, potentially essential nutrient based on studies with rats
19-0004 ARSENIC, prescribed analytical methods for those discharging pollutants into U.S. waterways
19-0004 ARSENIC, procedures for obtaining NPDES permits for discharge into U.S. waterways
7-0002 ARSENIC, proportionate mortality studies
13-0005 ARSENIC, proposed OSHA standard for exposure to
9-0002 ARSENIC, removal from water and air
24-0002 ARSENIC, researchers argue that no conclusive proof of carcinogenicity of arsenic (compounds) yet established
7-0002 ARSENIC, respiratory cancer and occupational exposure
13-0002 ARSENIC, Sherwin-Williams eliminates arsenic chemicals plant at Bound Brook, N.J.
18-0005 ARSENIC, South America and Africa protest dumping of wastes into Atlantic off western Africa by Finnish oil company
9-0001 ARSENIC, spill hazards and management
9-0002 ARSENIC, standards
15-0005 ARSENIC, storage and handling
26-0005 ARSENIC, Sweden dumps large quantities into Gulf of East Bothnia but Finland cannot dump in South Atlantic
7-0004 ARSENIC, synergistic effects in drinking water
10-0004 ARSENIC, teratogenicity and embryolethality in rats, hamsters, and mice
16-0005 ARSENIC, to be examined as potential toxic water pollutant
20-0003 ARSENIC, tolerance in plants growing on abandoned arsenic mine
14-0003 ARSENIC, tolerance in poultry liver
15-0002 ARSENIC, toxic and relatively accessible from environmental standpoint
8-0001 ARSENIC, toxicity potential determination via particle size, adsorption, and respiratory deposition profiles
25-0003 ARSENIC, trace element in ASTM type A jet fuel
7-0003 ARSENIC, trace element in seawater
7-0008 ARSENIC, use in photovoltaic cells for solar energy
1-0005 ARSENIC, waste disposal
4-0006 ARSENIC, water quality criteria, Florida
2-0001 ARSENIC, water quality criteria, New Jersey
4-0008 ARSENIC, water quality criteria, Ohio
3-0013 ARSENIC, water quality criteria, Texas
4-0007 ARSENIC, water quality criteria, West Virginia
3-0009 ARSENIC, water quality standards, Illinois
5-0002 ARSENIC, water quality standards, Oregon
15-0005 ARSENIC AND ITS COMPOUNDS, threshold limit values
25-0002 ARSENIC AND OTHER TOXIC ELEMENTS, marked increase in concentration with decreasing particle size noted in studies of the chemical composition of fly ash as a function of particle size
19-0044 ARSENIC AND OTHER VOLATILE TRACE ELEMENTS seen to have cycles very different from those of nonvolatile elements
9-0002 ARSENIC AND THE ENVIRONMENT, review
10-0006 ARSENIC COMPOUNDS, carcinogenicity study on rats
13-0006 ARSENIC COMPOUNDS, potential carcinogens
21-0001 ARSENIC COMPOUNDS, potential inhalation hazard for forestry workers

Ref. No.

- 23-0003 ARSENIC COMPOUNDS, potential mutagens in bacteria
- 13-0008 ARSENIC METABOLISM, added arsenite in diet and content in rat organs
- 13-0003 ARSENICAL HYPERKERATOSIS of the skin noted in Rhodesian gold miners
- 13-0045 ARSENICALS, potential liver carcinogens in man
- 13-0005 ARSINE, not included in proposed OSHA worker exposure standard for inorganic arsenic
- 9-0005 ARSINE GAS, health hazard
- 11-0003 ARSINE POISONING, burning of fossil fuels may magnify incidents of
- 11-0003 ARSINE POISONING, symptoms and treatment
- *21-0003 ARYL PHOSPHATES, capacity increase announced by FMC Corp.
- * 2-0045 ASBESTOS, acoustic tile installers, hazards
- *20-0014 ASBESTOS, adsorption of water and benzene on chrysotile
- * 7-0010 ASBESTOS, air pollution regulations for States
- * 2-0011 ASBESTOS, air quality levels
- * 3-0015 ASBESTOS, air quality standards, Illinois
- * 8-0007 ASBESTOS, airborne carcinogen, potential contaminant of food-grade salt
- *20-0012 ASBESTOS, alternative plans for disposal of Reserve Mining's taconite tailings evaluated
- * 3-0016 ASBESTOS, ambient air quality standards, New Mexico
- *16-0042 ASBESTOS, analysis and monitoring of in food and drugs
- * 2-0013 ASBESTOS, analysis by electron microscopy
- * 2-0014 ASBESTOS, analysis by microfiltration
- *16-0039 ASBESTOS, analysis for in environmental samples
- *16-0035 ASBESTOS, analysis of amphibole asbestiform fibers in municipal water supplies
- *16-0037 ASBESTOS, analysis of microparticles in deep sea sedimentation
- *18-0007 ASBESTOS, apparently non-carcinogenic when fed to animals
- * 6-0008 ASBESTOS, argument on transmigration of ingested particles through intestinal mucosa in man
- *16-0013 ASBESTOS, argument to balance ill-health from pollutants versus possible resulting poverty
- *20-0005 ASBESTOS, background information on evaluation of occupational exposure to airborne
- *16-0007 ASBESTOS, bibliography on all aspects of air and water pollution by
- * 6-0010 ASBESTOS, biological effects
- *16-0021 ASBESTOS, biological effects of ingested asbestos (NIHES-EPA conference proceedings)
- * 6-0005 ASBESTOS, biological effects on man and animals
- * 1-0009 ASBESTOS, biological hazard
- *16-0031 ASBESTOS, bodies and fibers in lung tissues
- * 2-0009 ASBESTOS, bone marrow effects
- * 9-0008 ASBESTOS, burden of proof in environmental legislation
- * 2-0010 ASBESTOS, carcinogen
- * 4-0009 ASBESTOS, carcinogenic effect of low level exposure
- *22-0004 ASBESTOS, carcinogenicity indicated by development of mesothelioma of the pleura in rats
- *15-0012 ASBESTOS, carcinogenicity of
- 1-0007 ASBESTOS, carcinogenicity of
- * 6-0010 ASBESTOS, carcinogenicity of fibers related to physical characteristics
- *12-0004 ASBESTOS-CEMENT pipe for water not a health hazard
- *16-0022 ASBESTOS, chemical and physical properties and pathological potential of ingested fibers
- *16-0014 ASBESTOS, comments on FDA's proposed notice of restricting use of asbestos filters in manufacture of parenteral drugs
- *14-0007 ASBESTOS, company will close mine in Vermont but employees intend to purchase and have won EPA extension of deadline for pollution-control equipment
- * 5-0007 ASBESTOS-CONTAMINATED TALC, potential carcinogen
- *16-0016 ASBESTOS, continuous vigilance needed to prevent the spread of occupational asbestos disease into the general public
- *20-0008 ASBESTOS, control in steam-electric generating plants
- 25-0045 ASBESTOS, control of fiber emissions under Regulation Eight in San Francisco Bay Area
- *21-0005 ASBESTOS, counting fibers by the most probable number method
- *20-0013 ASBESTOS, current British practices indicate steady improvement of work area concentrations
- *16-0057 ASBESTOS, cytotoxicity of heated chrysotile
- *16-0017 ASBESTOS, detection and identification of by microscopical dispersion staining
- *16-0034 ASBESTOS, detection and quantitation of chrysotile fibers in water
- * 9-0010 ASBESTOS, detection equipment installed in Lake Michigan
- *16-0027 ASBESTOS, diffuse diffraction patterns of chrysotile and powdered chrysotile yield structural information
- *16-0064 ASBESTOS, digestive system cancer among workers inhaling asbestos particles
- * 3-0018 ASBESTOS, discovery of asbestiform amphibole fibers in western Lake Superior
- *16-0070 ASBESTOS, effect of multiple factors in development of cancer
- * 7-0014 ASBESTOS, effects of court ruling on company liability for hazards
- *16-0067 ASBESTOS, effects of ingested chrysotile on DNA synthesis in gastrointestinal tract and liver of the rat
- * 2-0010 ASBESTOS, effects of particle size
- * 3-0014 ASBESTOS, effluent limitations and guidelines
- *16-0028 ASBESTOS, electron microscope examination of microparticles
- *22-0003 ASBESTOS, elimination of, in filtration step for analysis of crude fiber
- *16-0063 ASBESTOS, epidemiology of gastrointestinal cancer
- * 4-0010 ASBESTOS, environment control impact
- * 7-0009 ASBESTOS, environmental detecting equipment for water, land, and air monitoring
- * 9-0007 ASBESTOS, EXPOSURE ASSOCIATED WITH CHRONIC FIBROSING PROCESSES, ferruginous bodies, and carcinoma
- * 7-0014 ASBESTOS, fatal mesothelioma in insulation worker
- * 8-0006 ASBESTOS-FILLED heat-resistant phenolics discontinued by UC
- * 6-0004 ASBESTOS, formation of giant cells in peritoneal cavity of rats administered crocidolite fibers
- *12-0004 ASBESTOS, further studies on health effects of fibers and asbestos-cement pipe systems recommended
- * 7-0010 ASBESTOS, hazardous air pollutant per EPA
- * 2-0012 ASBESTOS, hazardous effects
- * 2-0013 ASBESTOS, hazardous effects of dust
- *16-0072 ASBESTOS, health aspects bibliography covering literature from 1960-1974
- *11-0004 ASBESTOS, health hazards
- 7-0006 ASBESTOS, health hazard to workers
- * 9-0009 ASBESTOS, health hazard to workers and the general public
- * 4-0011 ASBESTOS, health hazard to workers' families
- * 3-0008 ASBESTOS, health hazard to workers' families

Ref. No.

- *16-0011 ASBESTOS, histological cell types of lung cancer in workers suffering from asbestosis
- *14-0004 ASBESTOS, identification and measurement of in water
- *16-0020 ASBESTOS, identification and quantitation of in talc
- *16-0024 ASBESTOS, identification and quantitation of microparticles in solid materials in relation to biological interactions
- *16-0062 ASBESTOS, immunological responses
- *15-0009 ASBESTOS, in drinking water
- *16-0025 ASBESTOS, in talc
- * 2-0006 ASBESTOS, industrial disease research
- 8-0042 ASBESTOS, industry sales in 1973 highest ever despite strict OSHA standards imposed several years ago
- * 6-0005 ASBESTOS, influence of physical properties of fibers on biological effects
- *18-0007 ASBESTOS, ingested fibers apparently do not penetrate tissues in rats
- * 7-0013 ASBESTOS, inhalation carcinogenesis, animal studies
- *16-0040 ASBESTOS, inorganic particle content of food and drugs as determined by optical microscopy
- * 9-0007 ASBESTOS, interrelationship of biological responses
- *16-0008 ASBESTOS, interstitial fibrosis association with asbestos fibers detected by electron microscopy
- *16-0015 ASBESTOS, its effect on public health studied under NIEHS funding
- *25-0010 ASBESTOS, its environmental impact
- *16-0023 ASBESTOS, its geology and its effect on health
- *16-0053 ASBESTOS, its interaction with alveolar cells
- *15-0011 ASBESTOS, known occupational carcinogen with assigned TLV
- * 6-0007 ASBESTOS-LIKE FIBERS, potential carcinogens, public health controversy
- *16-0050 ASBESTOS, locating fibers in bowel wall of animals fed asbestos
- *15-0008 ASBESTOS, low dust counts in many British firms reflect industry's effort to improve control standards
- *16-0010 ASBESTOS, lung function consequences of dust exposure in asbestos cement manufacturing plants
- * 3-0017 ASBESTOS, malignant mesothelioma, industrial and domestic cases
- * 5-0008 ASBESTOS, membrane carcinogen
- *11-0005 ASBESTOS, mesothelioma resulting from occupational exposure
- *16-0051 ASBESTOS, method for determining relationship between asbestos exposure and development of colon-rectum cancer
- * 6-0003 ASBESTOS, method of sealing crocidolite asbestos deposits in factories to control potential hazard
- *16-0029 ASBESTOS, microscopy methods of particle identification
- *16-0059 ASBESTOS, monocyte-macrophage reactions in relation to the biological effects of ingested asbestos
- * 8-0008 ASBESTOS, new FDA analytical techniques may permit detection of small amounts
- *19-0007 ASBESTOS, new processing sequence during fabrication of textile fabrics may help manufacturers meet OSHA asbestos standards that are to be enforced in July 1976
- 17-0005 ASBESTOS, new studies on occupational carcinogenicity
- 12-0001 ASBESTOS, OSHA preparing standard for
- *16-0045 ASBESTOS, pathological effects of in small animals
- *23-0004 ASBESTOS, physical parameters of airborne fibers found in various industrial environments
- *13-0009 ASBESTOS, penetration through the digestive tract of rats
- *16-0046 ASBESTOS, penetration through the digestive wall in rats
- * 3-0002 ASBESTOS, plastics filler, potential toxicity
- *19-0006 ASBESTOS, possible presence in talc used to coat short-grained rice raises health hazard question
- *15-0010 ASBESTOS, potential carcinogen in water
- * 6-0011 ASBESTOS, potential carcinogen to thousands of workers, should be concern of scientists
- *23-0008 ASBESTOS, potential cause of stomach cancer and breast cancer
- * 8-0008 ASBESTOS, potential contaminant in table salt; FDA will reply to accusation
- *16-0063 ASBESTOS, potential gastrointestinal carcinogen
- * 6-0009 ASBESTOS, potential hazard to smokers
- * 6-0010 ASBESTOS, potential health effects from effects of fibers on lymph nodes
- *16-0044 ASBESTOS, potential health hazards still a problem
- *14-0006 ASBESTOS, potential health impact of inorganic particles of agricultural origin
- *16-0041 ASBESTOS, potential laryngeal and gastrointestinal tract carcinogen
- *16-0055 ASBESTOS, potential lung and intestinal carcinogen
- * 6-0009 ASBESTOS, proposed National emission standards
- * 7-0015 ASBESTOS, protein adsorption
- * 2-0007 ASBESTOS, public health threat vs. local economy
- * 6-0006 ASBESTOS, pulmonary and pleural asbestosis
- * 6-0010 ASBESTOS, quantitative study of fibrous particles in biological specimens using microfiltration method
- *16-0033 ASBESTOS, reduction of air emissions from Reserve Mining plant ordered by court because of potential carcinogenicity
- *17-0005 ASBESTOS, research on potential health hazards of contaminated water, funding
- * 7-0012 ASBESTOS, Reserve Mining now under court order to stop its discharges into Lake Superior
- *17-0005 ASBESTOS, Reserve Mining still awaits state approval for on-land disposal system
- * 2-0008 ASBESTOS, respiratory effects
- *16-0068 ASBESTOS, review of animals useful for studying bowel cancer
- *16-0066 ASBESTOS, review of cancer (mesothelioma) in population where about 90% are exposed to asbestos
- *20-0005 ASBESTOS, review of inhalation hazard associated with its fibers
- *15-0010 ASBESTOS, review of taconite waste dumped into Lake Superior
- *16-0069 ASBESTOS, risk of mesothelial tumors related to degree and length of exposure to asbestos dust
- *22-0002 ASBESTOS, safe way to manufacture products containing
- *11-0004 ASBESTOS, safety control measures for exposures in mining, milling, and manufacturing
- * 2-0012 ASBESTOS, sampling and analysis of in California environment
- *20-0005 ASBESTOS, sampling and analytical methods used in occupational exposure evaluation
- *20-0004 ASBESTOS, sampling and counting procedures recommended for evaluation of occupational exposures to airborne
- * 6-0002 ASBESTOS, selective release of lysosomal enzymes from mononuclear phagocytes
- *16-0042 ASBESTOS, sources of contamination of food and drugs by
- *20-0011 ASBESTOS, state-of-art report issued by IJC
- * 3-0015 ASBESTOS, storage, transport and disposal
- * 2-0006 ASBESTOS, studies with nonhuman primates

Ref. No.

- * 9-0008 ASBESTOS, taconite tailings dumping case supra proposed legislation to shift burden of proof in environmental litigation to the defendant
- * 7-0011 ASBESTOS, targeted air pollutant per OSHA
- * 20-0007 ASBESTOS, technological feasibility of the 2 fibers/cc asbestos standard in asbestos textile facilities
- * 16-0009 ASBESTOS, the W 27 antigen may be useful marker of an enhanced susceptibility to tissue-damaging effects of asbestos dust
- * 20-0004 ASBESTOS, TLV of 5 fibers greater than 5 micrometers in length per milliliter of air established by ACGIH in 1974
- 16-0005 ASBESTOS, to be examined as potential toxic water pollutant
- * 5-0007 ASBESTOS, toxic effects
- * 3-0015 ASBESTOS, toxic effects and hazards
- * 16-0065 ASBESTOS, tumorigenic effect of injected chrysotile and other fibrous dust in experimental animals
- * 16-0052 ASBESTOS, use of suitable animals (dogs rather than rats) should improve chances of learning about effects of ingested asbestos on human stomachs
- * 16-0012 ASBESTOS, Vermont mine now owned by employees may contribute 40% or more to 1975 U.S. production
- * 1-0008 ASBESTOS, waste disposal
- * 14-0005 ASBESTOS, world supply in danger of depletion
- * 16-0063 ASBESTOS and cigarette smoking, synergistic effect in producing bronchogenic cancers in insulation workers
- * 10-0007 ASBESTOS and health
- * 23-0009 ASBESTOS DUST, effect on lipid peroxidation in red blood cells
- * 23-0009 ASBESTOS DUST, membrane-damaging effects may be due to lipid peroxidation
- * 16-0061 ASBESTOS FIBER, correlation between tissue response and content of
- * 16-0061 ASBESTOS FIBER, effect of concentration on lung tissue and mesothelioma development
- * 16-0030 ASBESTOS FIBER, identification by a scanning transmission energy analysing microscope and an automated microprobe
- * 16-0032 ASBESTOS FIBERS, and accompanying minerals, investigation and analysis of in biological materials
- * 16-0026 ASBESTOS FIBERS, approaches and constraints to identification and quantitation of
- * 3-0013 ASBESTOS FIBERS, carcinogenic role
- * 16-0014 ASBESTOS FIBERS, carcinogens when inhaled in large amounts prompted FDA proposal to ban use of asbestos filters in manufacture of parenteral drugs
- * 23-0005 ASBESTOS FIBERS, complete water removal by reverse osmosis
- * 16-0018 ASBESTOS FIBERS, electron microscopical investigation of
- * 16-0019 ASBESTOS FIBERS, elemental analysis of by electron probe techniques
- * 14-0008 ASBESTOS FIBERS, fiber glass as potential substitutes for
- * 16-0048 ASBESTOS FIBERS, in colonic wall of rats
- * 16-0056 ASBESTOS FIBERS, modification of biological surface activity of particles by adsorption on polymers
- * 16-0055 ASBESTOS FIBERS, penetration into cells
- * 16-0043 ASBESTOS FIBERS, potential health hazards of ingestion
- * 16-0049 ASBESTOS FIBERS, potential gastrointestinal carcinogen
- * 16-0034 ASBESTOS FIBERS, potential pathogenic and/or cytotoxic effect on cells
- * 20-0009 ASBESTOS FIBERS, removal from potable water
- * 16-0034 ASBESTOS FIBERS, response of cell cultures to
- * 16-0058 ASBESTOS FIBERS, review of fibrogenesis by inhaling or ingesting of
- * 16-0071 ASBESTOS MINERALS, their effects on biological systems from standpoint of current and needed research
- 17-0025 ASPHALTENES, acid-base structure examined
- 26-0033 AUTO CATALYSTS, new Du Pont series incorporating platinum and palladium in perovskite crystal structure can be used even with leaded gasoline
- 21-0012 AUTOMOBILE OF FUTURE, SRI study indicates long-term need for petroleum-based fuels or very similar fuels made from synthetic crude derived from oil shale or from coal
- 4-0055 AEO INITIATORS, new initiators for unsaturated polyester curing

- 17-0035 BACTERIAL MUTATION TESTING, pros and cons of merits for screening potential carcinogenic chemicals
- * 4-0009 BENZENE, carcinogen
- 7-0006 BENZENE, health hazard to worker
- 21-0033 BENZENE IN GASOLINE, level of benzene vapor in air lower than thought
- 5-0009 BENZIDINE, carcinogen, adsorbable properties
- 23-0006 BENZIDINE, carcinogen in man now shown to be mutagen
- 24-0004 BENZIDINE, dye manufacturers discontinue benzidine-based special dyes because of problems arising from OSHA regulations
- 20-0015 BENZIDINE, GLC analysis judged better than colorimetric or TLC analysis for determination of benzidine in ppm range in wastewaters
- 7-0006 BENZIDINE, health hazard to workers
- 17-0005 BENZIDINE, new studies on occupational carcinogenicity
- 9-0011 BENZIDINE, potential bladder carcinogen
- 24-0005 BENZIDINE, potential carcinogen
- 12-0001 BENZIDINE AND ITS SALTS, OSHA emergency standard in effect
- * 15-0011 BENZIDINE AND ITS SALTS, potential occupational carcinogen without assigned TLV
- 16-0005 BENZIDINE AND ITS SALTS, under examination by EPA as an established toxic water pollutant
- 15-0013 BENZIDINE REARRANGEMENT of 1,2-diphenyl hydrazine
- 15-0014 BENZIDINE REARRANGEMENTS in moderately concentrated aqueous acid
- 9-0011 BENZIDINE (4,4'-DIAMINOPHENYL), potential bladder carcinogen
- 11-0034 BENZO[a]PYRENE, potential as carcinogen in seafood less than or comparable to other carcinogens
- 17-0035 BENZYL (BENZYL) CHLORIDE, potential carcinogen
- 17-0004 BENZYL CHLORIDE, reported cause of lung cancer and maxillary malignant lymphoma in Japanese workers
- 20-0045 BIOTIC METABOLISM of Northern Hemisphere not yet affected by industrial processes
- 23-0011 BIS(2-CHLOROETHYL) ETHER, collection and analysis of in ambient atmospheres
- 23-0012

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20-0032	BIS(2-CHLOROMETHYL) ETHER, eliminated as intermediate in surfactants by Rohm & Haas after 10 ppb found in plant effluent
8-0021	BIS(CHLOROMETHYL) ETHER, trace chemical in drinking water implicated in cancer-related studies
16-0002	BIS(CHLOROMETHYL) ETHER, among examples of potentially hazardous chemicals cited as need for passage of toxic substances control bill
4-0023	BIS(CHLOROMETHYL) ETHER, analysis
19-0018	BIS(CHLOROMETHYL) ETHER, averages 2 ppb in textile samples but effects on humans at levels found are not yet known
26-0009	BIS(CHLOROMETHYL) ETHER, can be formed from reaction of formaldehyde with hydrogen chloride and other chemical reactions
7-0027	BIS(CHLOROMETHYL) ETHER, carcinogen, possible chemical reactants
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20-0030	BIS(CHLOROMETHYL) ETHER, detection and estimation in air by gas chromatography-high resolution mass spectrometry
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21-0011	BIS(CHLOROMETHYL) ETHER, detection technique
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*15-0011	BIS(CHLOROMETHYL) ETHER, known occupational carcinogen with assigned TLV
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9-0021	BIS(CHLOROMETHYL) ETHER, possible formation of in stomach from hexamethylene tetramine
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7-0008	BORON, use in photovoltaic cells for solar energy
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5-0002	BORON, water quality standards, Oregon
*16-0077	BROMIDES, pollutants from plastic manufacturing and crop fumigation destroy ozone effectively enough to have potential in war weapon use
4-0015	BROMINATED AROMATICS, flame retardants, production
25-0012	BROMINATED BIPHENYLS, comparison of environmental data with data on polychlorinated biphenyls
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17-0006	BROMINATED BIPHENYLS, photoreactivity
5-0019	BROMINATED COMPOUNDS, mechanisms of flame retardancy

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- 15-0022 BROMINATED CYCLIC COMPOUND in new flame retardant for apparel fabrics deemed safe following toxicological tests
- 12-0022 BROMINATED CYCLIC COMPOUND is basis for new fire retardant system for polyester/cellulosic blends
- 8-0015 BROMINATED FLAME RETARDANTS, market potential
- 4-0014 BROMINATED FLAME RETARDANTS, production
- 24-0006 BROMINE, non-destructive neutron activation analysis for determination of organically bound non-polar bromine
- *16-0076 BROMINE, potential cause of ozone depletion in stratosphere via bromide-containing aerosol
- *18-0012 BROMINE, potential hazard in stratosphere
- *13-0020 BROMOTRIFLUOROMETHANE, toxicologic and physiologic effects on cats
- *20-0049 BUTYL GLYCOLYL BUTYL PHTHALATE, toxicity in human cell cultures
- 17-0060 BUTYLATED HYDROXYTOLUENE, potential protective agent against cancer and age retarder in mice
- 4-0035 2-t-BUTYLAZO-2-CYANOBUTANE, new cure initiator, polyesters
- 4-0035 1-5-BUTYLAZO-1-CYANOCYCLOHEXANE, new cure initiator, polyesters
- 4-0035 2-t-BUTYLAZO-2-CYANOPROPANE, new cure initiator, polyesters
- 22-0039 CADMIUM, epidemiological survey, Houston, Texas
- 10-0028 CANCER, chemical process industries concerned about screening and risk level of potential unidentified carcinogens
- 20-0063 CANCER, NCI maps analyze cancer mortality rates by geographic areas in U.S.
- 10-0029 CANCER, NIOSH pressing for stiffer standards for chemicals in the workplace, plus public alerting
- 25-0042 CANCER MORTALITY IN U.S., geographic analysis for 1950-1969
- 21-0030 CANCER RESEARCH, chemical companies may open up their medical files for cooperative NCI-industry effort
- 26-0015 CARBARYL, degradation by marine microorganisms
- 11-0030 CARBON BLACK, potential carcinogen
- 11-0030 CARBON BLACK, rubber companies refute claim of its potential carcinogenicity
- 19-0044 CARBON DIOXIDE, increase in earth's biomass due to CO₂ given off from burning of fossil fuel
- *24-0013 CARBON DIOXIDE, potential beneficiary of chlorofluorocarbon controversy as an aerosol propellant with some manufacturers probably beginning full-line production using CO₂ before end of 1975
- 16-0117 CARBON DISULFIDE, toxicity in humans
- 5-0020 CARBON TETRACHLORIDE, fire extinguishing agent, toxicity
- 7-0059 CARBON TETRACHLORIDE, potential carcinogen in drinking waters
- 8-0048 CARCINOGEN, definition by EPA
- 8-0003 CARCINOGENS, according to NIOSH all carcinogens should have a single no-detectable limit
- 9-0055 CARCINOGENS, economical screening techniques under development
- 10-0020 CARCINOGENS, *in vitro* testing of potentially hazardous environmental chemicals
- 2-0015 CARCINOGENICITY TESTS, ethylenimine
- 2-0015 CARCINOGENICITY TESTS, 8-propiolactone
- 19-0039 CATIONIC COATING COLORS, hazards to fish from disposal of
- 8-0047 CERIUM(2,2,6,6-TETRAMETHYL-3,5-HEPTANEDIONATE)₄, possible alternative for tetraethyllead, may have adverse effects on car catalytic converters and engines
- 10-0039 CHEMICAL CARCINOGENS, proposed methods for establishing a "safe" exposure level
- 25-0011 CHEMICAL CONTROLS, National Academy of Sciences' report reviews decision making processes for regulating chemicals in the environment
- 7-0006 CHEMICAL INDUSTRIES, occupational hazards
- 20-0001 CHEMICAL TRANSPORTATION HAZARDS, federal regulations review
- 3-0066 CHEMICAL WASTE DUMPING, potential cancer hazard
- 16-0119 CHEMICALS, burden of proving safe rests most likely with the producer
- 22-0042 CHEMICALS, evaluating in the environment
- 15-0042 CHEMICALS, NIOSH seeks background information for setting work-place exposure standards for 16 chemicals
- * 9-0006 CHIRAL O-2-BUTYL ETHYLPHOSPHOTHIOIC ACID, absolute configuration
- 26-0034 CHLORDANE, potential carcinogenic pesticide may be suspended by EPA, thus prohibiting further manufacture and distribution
- 17-0045 CHLORINATED DIBENZO-p-DIOXINS, potential health hazards
- *18-0010 CHLORINATED ETHYLENES, potential source of phosgene and other harmful air pollutants
- *18-0010 CHLORINATED ETHYLENES, potentially harmful drycleaning compounds
- *18-0010 CHLORINATED FLUOROCARBONS, debate on possible effect on protective stratospheric ozone continues
- 7-0024 CHLORINATED FLUOROCARBONS, potential atmospheric hazard
- 10-0043 CHLORINATED HYDROCARBONS, detection in drinking water raises question of chlorination as disinfecting technique
- 26-0037 CHLORINATED HYDROCARBONS, photosynthesis of marine phytoplankton
- * 5-0006 CHLORINATED ORGANIC/PHOSPHORUS COMPOUNDS, flame retardants
- 9-0048 CHLORINATED POLYMERS, smoke particulates transport HCL, potential cause of pulmonary edema
- 10-0043 CHLORINATION AS WATER DISINFECTANT, controversy over use
- 10-0044 CHLORINATION AS WATER DISINFECTANT, pros and cons, possible alternative methods
- *18-0011 CHLORINE, earth satellite will monitor in stratosphere
- *18-0012 CHLORINE, questions continue to rise on amount and effects of free chlorine in stratosphere
- 12-0034 CHLORINE, reactions in water
- 4-0015 CHLORINE-BROMINE PRODUCTS, flame retardants, production
- 26-0025 CHLOROACETALDEHYDE, mutagenicity studies
- 26-0025 CHLOROACETIC ACID, mutagenicity studies
- 3-0002 2-CHLORO-1,3-BUTADIENE, liver carcinogen
- 24-0033 2-CHLOROBUTADIENE, mutagenic effect noted in bacteria
- 13-0055 2-CHLOROBUTADIENE, potential carcinogen
- * 9-0013 CHLOROCARBONS, contributors of halocarbon chlorine entering stratosphere
- 23-0013 CHLORODIBENZO-p-DIOXIN, contaminant in commercial hexachlorobenzene
- 23-0013 CHLORODIBENZOPURAN, contaminant in commercial hexachlorobenzene
- 26-0025 CHLOROETHANOL, mutagenicity studies
- 17-0016 α-CHLOROETHER ANESTHETIC, potential carcinogen
- *25-0013 CHLOROFUOROCARBON, sources of environmental contamination
- 4-0020 CHLOROFUOROCARBONS, atmospheric hazards
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- *22-0208 CHLOROFLUOROCARBONS, ban on use as propellants in Oregon
- *13-0014 CHLOROFLUOROCARBONS, chlorine-ozone reactions labelled speculative at this time
- *19-0011 CHLOROFLUOROCARBONS, clarification of calculations on stratospheric effects of
- *13-0013 CHLOROFLUOROCARBONS, dangers from use as propellants in aerosol sprays not seen great enough to warn consumers against their use
- *10-0012 CHLOROFLUOROCARBONS, economic impact of possible ban on their production
- *13-0014 CHLOROFLUOROCARBONS, impact of production
- 26-0006 CHLOROFLUOROCARBONS, may be only minor source of stratospheric chlorine
- *23-0010 CHLOROFLUOROCARBONS, Oregon passes first law banning sale of aerosol products propelled by
- *16-0076 CHLOROFLUOROCARBONS, ozone depletion of stratosphere
- *10-0012 CHLOROFLUOROCARBONS, potential health and other environmental hazards
- *25-0013 CHLOROFLUOROCARBONS, restrictions on production and use in U.S. would partly reduce, but not end, possible destruction of stratospheric
- *23-0010 CHLOROFLUOROCARBONS, S.C. Johnson & Son Inc. (Johnson Wax) has stopped using chlorofluorocarbon propellants in its products
- *24-0016 CHLOROFLUOROCARBONS, use as propellants in insecticides now relatively limited
- *19-0010 CHLOROFLUOROCARBONS, with C-H bond (like PC-22) or C-C bond react with OH radicals in lower atmosphere and are destroyed, unlike chlorofluoromethanes
- 3-0031 CHLOROFLUOROETHANES, new production process
- 2-0020 CHLOROFLUOROETHANE, global threat
- *18-0019 CHLOROFLUOROMETHANE, predictions of effects on ozone show delay of 10 to 20 years
- *18-0009 CHLOROFLUOROMETHANE, two bills introduced in Congress to study ozone/fluorocarbon issue and/or limit production and import
- *19-0011 CHLOROFLUOROMETHANES, atmospheric effects
- 3-0012 CHLOROFLUOROMETHANES, atmospheric hazards
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- 8-0019 CHLOROFLUOROMETHANES, ban on use requested
- 6-0016 CHLOROFLUOROMETHANES, potential atmospheric hazard
- 8-0019 CHLOROFLUOROMETHANES, production figures
- 3-0012 CHLOROFLUOROMETHANES, skin carcinogens
- *17-0014 CHLOROFLUOROMETHANES, study to assess probable effects on stratospheric ozone
- *24-0007 CHLOROFLUOROMETHANES, used at double their 1972 rate could cause 15% reduction in total ozone content of the atmosphere
- 22-0041 CHLOROFORM, degradability of
- 7-0059 CHLOROFORM, potential carcinogen in drinking waters
- *19-0016 CHLOROFORM, degradation product of haloethane causes central lobular necrosis and other effects in monkeys and rats
- 6-0021 CHLOROMETHYL ETHER, its production can produce bis-chloromethyl ether, a carcinogen
- 26-0001 CHLOROMETHYL ETHERS, mortality patterns among workers exposed to
- 4-0023 CHLOROMETHYL METHYL ETHER, analysis
- 5-0026 CHLOROMETHYL METHYL ETHER, carcinogenicity in mice and rats
- 20-0031 CHLOROMETHYL METHYL ETHER, detection in air at the ppb level by gas-liquid chromatography
- 5-0025 CHLOROMETHYL METHYL ETHER, health hazard
- *15-0011 CHLOROMETHYL METHYL ETHER, high potency tumor-inducing substance in animals
- 13-0031 CHLOROMETHYL METHYL ETHER, inhalation carcinogenicity in rats and hamsters
- 15-0030 CHLOROMETHYL METHYL ETHER, inhalation carcinogenicity studies on animals
- 3-0002 CHLOROMETHYL METHYL ETHER, lung carcinogen
- 15-0030 CHLOROMETHYL METHYL ETHER, potential carcinogen in human
- 15-0029 CHLOROMETHYL METHYL ETHER, potential carcinogen in humans and animals
- 26-0001 CHLOROMETHYL METHYL ETHER, potential human respiratory carcinogen
- 3-0026 CHLOROPENTAFLUOROETHANE, inhalation toxicity, monkeys
- 3-0031 CHLOROPENTAFLUOROETHANE, new production process
- 17-0005 CHLOROPRENE, DuPont/WIOSH studying potential carcinogenicity of
- 13-0055 CHLOROPRENE, potential carcinogen
- 15-0049
- 17-0035
- 17-0004 CHLOROPRENE, skin and lung cancer in workers reported by Soviets
- 17-0004 CHLOROPRENE, to be included in carcinogen bioassay program of National Cancer Institute
- *16-0084 1-CHLORO-2-2-2-TRIFLUOROETHYL, DIFLUOROMETHYL ETHER, cardiovascular and respiratory effects of
- 6-0015 CHLOROTRIFLUOROETHYLENE POLYMERS, chemically-resistant containers for high purity chemicals
- 24-0044 CHROMATE PIGMENT DUSTS, potential lung carcinogens
- 25-0041 CHROMATE PIGMENTS, potential bronchial carcinogens
- 5-0065 CHROMATES, mutagenicity in bacteria
- *4-0009 CHROME COMPOUNDS, carcinogens
- *16-0067 CRYSTOLITE, effects of ingestion on gastrointestinal tract and liver of the rat
- 26-0036 CLIMATIC CHANGE, anticipated CO₂-induced warming trend may change global precipitation
- 19-0022 COAL, conversion to low-Btu fuel gas under study by GE
- 19-0027 COAL, fluidized bed gasification
- 8-0034 COAL, gasification and liquefaction are main conversion processes of future
- 18-0022 COAL, in situ gasification technology now looks more favorable
- 18-0021 COAL, methods for converting to liquid fuel
- 22-0012 COAL, production of liquid and gaseous hydrocarbons
- 11-0010 COAL, pyrolysis in a fluidized bed with an induction plasma
- 19-0030 COAL, slurry feeding of coal gasifiers
- 12-0014 COAL, technical and economic potential of distillate fuels from
- 20-0038 COAL-TO-SUBSTITUTE FUEL INDUSTRY some 10 years away for U.S. with estimated cost set at \$30 billion
- 8-0031 COAL, underground extraction as a liquid to be tried
- 1-0018 COAL GASIFICATION
- 17-0024 COAL GASIFICATION, American Natural Gas System plans 91-billion-cu. ft/yr. plant near Beulah, W.D.
- 20-0039 COAL GASIFICATION, British and Russian technology to be made available in U.S.
- 10-0018 COAL GASIFICATION, combined with electrical power could be economical
- 16-0089 COAL GASIFICATION, computer simulation of emissions
- 14-0021 COAL GASIFICATION, contract calls for pilot plant producing clean, low-Btu gas from variety of coals
- 19-0024 COAL GASIFICATION, description of Koppers-Totsch process
- 19-0026 COAL GASIFICATION, engineering problems (in Synthene process)
- 3-0044 COAL GASIFICATION, environmental considerations

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20-0037	COAL GASIFICATION, environmental impact study
20-0040	COAL GASIFICATION, essentially no gaseous emissions of cyanides, ammonia or hydrogen chloride to the atmosphere using Lurgi process
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14-0088	COAL GASIFICATION, for production of methyl alcohol
9-0032	COAL GASIFICATION, fracture of coal seams and process of in-situ gasification
14-0094	COAL GASIFICATION, fundamental information on various aspects
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6-0025	COAL GASIFICATION, possible environmental considerations
9-0005	COAL GASIFICATION, potential health hazard via arsine generation
17-0022	COAL GASIFICATION, potential source of benzene
24-0021	COAL GASIFICATION, potentially-harmful phenolic products found in waste water discharged from Synthene experiments
24-0019	COAL GASIFICATION, power plants of future that gasify coal in a combined cycle expected to recover minerals
11-0011	COAL GASIFICATION, process description and evaluation
3-0045	COAL GASIFICATION, processing developments
11-0013	COAL GASIFICATION, review of promising processes
20-0040	COAL GASIFICATION, single national SO ₂ standard seen as not equitably applicable
11-0014	COAL GASIFICATION, survey of techniques
17-0023	COAL GASIFICATION, synthesis gas from may prove basis of economical and attractive process for manufacture of ethylene glycol
8-0033	COAL GASIFICATION, technology evaluation
19-0029	COAL GASIFICATION, U-Gas process eliminates sulfur emission problem
6-0024	COAL GASIFICATION, underground, environmental safety unresolved
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5-0033	COAL GASIFICATION AND LIQUEFACTION, policy analysis for development
5-0031	COAL GASIFICATION AND LIQUEFACTION, research and development evaluation
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17-0025	COAL LIQUEFACTION, asphaltene are key intermediates in conversion of coal to oil
19-0025	COAL LIQUEFACTION, at pilot plant level
7-0035	COAL LIQUEFACTION, control of SNG pollution possible with existing technology
4-0030	COAL LIQUEFACTION, demonstration plant
7-0032	COAL LIQUEFACTION, environmental and process publications announced
11-0012	COAL LIQUEFACTION, environmental factors and treatment methods for solid, liquid and gaseous effluents
4-0028	COAL LIQUEFACTION, environmental impact
9-0029	COAL LIQUEFACTION, Fischer-Tropsch synthesis not attractive for gasoline production; may have interest for short-chain olefins or naphtha substitutes
7-0034	COAL LIQUEFACTION, Gulf Research plans for production and environmental protection
21-0012	COAL LIQUEFACTION, may yield 4 million bbl/day of oil by year 2000 with great national effort and capital expenditures of \$32 billion
4-0029	COAL LIQUEFACTION, new process from UOP
14-0020	COAL LIQUEFACTION, new process permits use of previously oil-fired burners and reduces soot in flue gas
16-0093	COAL LIQUEFACTION, new Sasol II facility planned in South Africa is feasible there but cost-prohibitive in U.S.
13-0024	COAL LIQUEFACTION, plant design (Project Seacoke)
13-0023	COAL LIQUEFACTION, process description (Project Seacoke)
16-0090	COAL LIQUEFACTION, process development unit plant to test "Synthoil" technology to be operated by Bethlehem Steel Corp.
3-0046	COAL LIQUEFACTION, processes
7-0033	COAL LIQUEFACTION, state-of-art study
19-0031	COAL LIQUEFACTION, Synthoil process
9-0027	COAL LIQUEFACTION AND GASIFICATION, Coalcon's proposed process description
14-0022	COAL LIQUEFACTION AND GASIFICATION, costs and feasibility of SASOL-type process
13-0022	COAL LIQUEFACTION AND GASIFICATION, demonstration plant by Coalcon Co. could provide boiler fuels for 1000-Mw electricity generating station in 1980's
19-0023	COAL LIQUEFACTION AND GASIFICATION, description of Project COMED pilot plant
19-0034	COAL LIQUEFACTION AND GASIFICATION, hoped-for 1985 production goals not likely because of technical problems
14-0019	COAL LIQUEFACTION AND GASIFICATION, impact of environmental regulations on
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9-0028	COAL LIQUEFACTION AND GASIFICATION, need seen for development of low-cost, efficient technologies
17-0020	COAL LIQUEFACTION AND GASIFICATION, not economical source of feedstocks in near future
14-0019	COAL LIQUEFACTION AND GASIFICATION, potential air and water pollutants from
17-0021	COAL LIQUEFACTION AND GASIFICATION, pros and cons of economics of chemicals from compared to petroleum and natural gas based processes
9-0030	COAL LIQUEFACTION AND GASIFICATION, two coal feed injection systems may solve some process problems
14-0019	COAL LIQUEFACTION AND GASIFICATION, typical processes under development
11-0010	COAL PROCESSING, bibliography
18-0042	COAL TAR PITCH VOLATILES, potential carcinogens for coke oven workers

Ref. No.

- 20-0044 COASTAL ECOSYSTEMS, guidebook
5-0027 COED(CHAR-OIL-ENERGY-DEVELOPMENT) PROCESS, progress
5-0019 COMBUSTIBLE MATERIALS, hazards associated with
3-0073 COMMODITY SHORTAGES, environmental regulations
5-0027 CONSOL SYNTHETIC FUEL PROCESS, development
22-0039 COPPER, epidemiological survey, Houston, Texas
23-0022 COPPER-NICKEL TUBING corroded by salt water blamed for killing abalone
* 5-0006 CRESYL DIPHENYL PHOSPHATE, flame retardant
* 6-0003 CROCIDOLITE ASBESTOS, control of in factories
* 6-0004 CROCIDOLITE ASBESTOS FIBERS, formation of giant cells in rat peritoneal cavity
17-0042 CYCLAMATES, potential carcinogenicity now under review
- 15-0052 DDT, potential ocean contaminant
25-0012 DECARBODIPHENYL OXIDE, evaluation of as a flame-retardant chemical
25-0012 DECARBODIPHENYL OXIDE, review of its chemical/physical properties, toxicology, and environmental effects
26-0001 DECARBODIPHENYL OXIDE, toxicology ~'
2-0048 DECHLORANE, unrecognized marine pollutant
15-0050 DEEP-SEA MINING, potential ecological disturbance
3-0002 DIALKYL PHTHALATES, plastics component, potential toxicity
9-0047 DIALKYLHYDRAZINES, remote-acting carcinogen
10-0005 DI-(4-AMINO-3-CHLOROPHENYL)METHANE (NOCA), field tests for determining in factory atmospheres
11-0008 DIAMMONIUM PHOSPHATE, flame retardant effects on particulates from wood fires
16-0075 DIAMMONIUM PHOSPHATE, effect on emissions from slash burning (pine fuel beds)
11-0006 3,3'-DIBROMO BIPHENYL, optical properties
5-0066 1,2-DIBROMO-3-CHLOROPROPANE, Dow production planned
11-0006 2,2'-DIBROMO-4,4-DICARBOXY BIPHENYL, optical properties
16-0121 1,2-DIBROMOETHANE, genetic effects
*18-0015 1,1-DIBROMOETHYLENE, short-term inhalation toxicity in rats
16-0121 1,3-DIBROMOPROPANE, genetic effects
3-0021 DIBROMOTETRAFLUOROETHANE, toxicity
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3-0021 DIBROMOTRIFLUOROETHANE, toxicity
* 7-0041 DIBUTYL PHTHALATE, toxic effects on shrimp egg hatching
11-0007 3,3'-DICHLOROBENZIDINE, court rules "record" supports carcinogenicity potential
*15-0011 3,3'-DICHLOROBENZIDINE, high potency tumor-inducing substance in animals
7-0028 3,3'-DICHLOROBENZIDINE, OSHA standards challenged on lack of evidence re human carcinogenicity
24-0005 3,3'-DICHLOROBENZIDINE, potential carcinogen
16-0074 3,3'-DICHLOROBENZIDINE, potential carcinogen in rats
12-0001 3,3'-DICHLOROBENZIDINE AND SALTS, OSHA emergency standard in effect
8-0018 DICHLORODIFLUOROMETHANE, biotransformation in Beagles and man
*21-0007 DICHLORODIFLUOROMETHANE (FLUOROCARBON-12), causes drowsiness, sluggishness and tremors in animals at concentration of 20%
3-0026 DICHLORODIFLUOROMETHANE, inhalation toxicity, monkeys
6-0019 DICHLORODIFLUOROMETHANE, kinetics of uptake and elimination in Beagles and man
3-0029 DICHLORODIFLUOROMETHANE, oral toxicology
5-0026 2,3-DICHLORO-o-DIOXANE, carcinogenic activity
16-0121 1,2-DICHLOROETHANE, genetic effects
3-0026 DICHLOROMONOFLUOROMETHANE, inhalation toxicity, monkeys
*21-0007 DICHLOROTETRAFLUOROETHANE (FLUOROCARBON-114) causes drowsiness, sluggishness, tremors, and even death in animals at concentrations of 20%
3-0026 DICHLOROTETRAFLUOROETHANE, inhalation toxicity, monkeys
3-0031 DICHLOROTETRAFLUOROETHANE, new production process
10-0041 DICHLORVOS, review of safety and use
* 1-0022 2,2-DIETHOXYACETOPHENONE, light absorber
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*17-0030 DIETHYLHEXYL PHTHALATE, analytical procedure for analysis of in animal tissue
*12-0016 DI-(2-ETHYLHEXYL) PHTHALATE, apparently safe plasticizer for food packaging use
*12-0019 DI-(2-ETHYLHEXYL) PHTHALATE, ecological behavior in food chains of laboratory model ecosystem
* 2-0036 DI-(2-ETHYLHEXYL) PHTHALATE, effect of physical state on toxicological potential
*18-0027 DI-(2-ETHYLHEXYL) PHTHALATE, effect on heart rate in goldfish
*25-0027 DI-(2-ETHYLHEXYL) PHTHALATE, effects on the liver of rats
*12-0018 DI-(2-ETHYLHEXYL) PHTHALATE, in blood and tissues of patients on intravenous therapy
* 5-0040 DI-(2-ETHYLHEXYL) PHTHALATE, medical devices, potential toxicology
*12-0019 DI-(2-ETHYLHEXYL) PHTHALATE, metabolism and biomagnification in aquatic organisms
*13-0034 DI-(2-ETHYLHEXYL) PHTHALATE, metabolism by rats
*12-0018 DI-(2-ETHYLHEXYL) PHTHALATE, migration from PVC into blood
* 2-0035 DI-(2-ETHYLHEXYL) PHTHALATE, mutagenic and genetic effects
*23-0016 DI-(2-ETHYLHEXYL) PHTHALATE, potential cause of lung damage in rats
*12-0018 DI-(2-ETHYLHEXYL) PHTHALATE, potential toxicity in intravenous therapy
*25-0028 DI-(2-ETHYLHEXYL) PHTHALATE, soil microorganism utilization of
* 3-0053 DI-(2-ETHYLHEXYL) PHTHALATE, toxicity
*20-0049 DI-(2-ETHYLHEXYL) PHTHALATE, toxicity in human cell culture
* 7-0040 DI-(2-ETHYLHEXYL) PHTHALATE, toxicity potential in plastic devices exposed to blood
*18-0010 DIETHYLHYDROXYLAMINE, potential reducer of photochemical smog
*18-0010 DIETHYLHYDROXYLAMINE, potentially safer and more effective pollutant control means than are catalytic converters for autos
* 7-0041 DIETHYLPHthalate, toxic effects on shrimp egg hatching
3-0026 DIFLUOROETHANE, inhalation toxicity, monkeys
*16-0083 DIFLUOROETHYLENE, ozonolysis products
*18-0015 1,1-DIFLUOROETHYLENE, short-term inhalation toxicity in rats
* 7-0041 DIMEXYL PHTHALATE, toxicity studies re hatching of shrimp eggs
10-0014 DIISOCYANATE, respiratory hazards
26-0013 DIISOCYANATES, catalyzed reactions with alcohols
20-0051 DIISOCYANATES, contribution to flexural properties of polyurethane elastomers
26-0012 DIISOCYANATES, uncatalyzed reactions with alcohols

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- 21-0025 DIKETOPIPERAZINE, breakdown product of aspartame (artificial sweetener) suspected cause of uterine polyps in rats
- 5-0010 2,6-DIMETHYL-m-DIOXAN-4-OL ACETATE, carcinogen in rats
- * 7-0041 DIMETHYL PHTHALATE, toxic effects on shrimp egg hatching
- 6-0050 4-DIMETHYLAMINOAZOBENZENE, or methyl yellow, potential carcinogen
- 21-0001 DIMETHYLARSINIC ACID, potential health hazard for forestry workers
- 5-0026 DIMETHYLARBAMYL CHLORIDE, carcinogenic activity
- * 9-0024 1,2-DIMETHYLHYDRAZINE, colon carcinogenesis, rats
- * 15-0035 DIMETHYLHYDRAZINE, colon carcinogenesis study in rats
- * 15-0035 DIMETHYLHYDRAZINE, colonic tumors induced to greater extent in conventional rats than in germ-free rats
- 26-0011 DIMETHYLHYDRAZINE, potential pancreatic carcinogen in rabbits
- * 15-0034 1,2-DIMETHYLHYDRAZINE, liver damage in rats and mice
- * 15-0034 1,2-DIMETHYLHYDRAZINE, morphological and biochemical effects of, in rats and mice
- 26-0010 1,2-DIMETHYLHYDRAZINE, potential gastrointestinal carcinogen
- 16-0087 1,2-DIMETHYLHYDRAZINE, rat colonic tumors induced by
- * 1-0014 1,2-DIMETHYLHYDRAZINE HCL, carcinogen
- * 12-0016 DIOCTYL PHTHALATE, apparently safe plasticizer for food packaging use
- * 75-0028 DIOCTYL PHTHALATE, soil microorganism utilization of
- * 3-0053 DI-n-OCTYL PHTHALATE, toxicity
- * 7-0041 DIOCTYL PHTHALATE, toxicity studies re hatching of shrimp eggs
- 7-0017 DIOXANE, aqueous analysis technique
- 12-0005 DIOXANE, infrared reference spectra at OSHA concentration limit
- 3-0019 DIOXANE, toxicity and carcinogenicity studies
- 3-0020
- 3-0010 p-DIOXANE, carcinogen in rats and guinea pigs
- 7-0016 1,4-DIOXANE, odor properties
- 8-0011 1,4-DIOXANE, toxicity studies, rats
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- 7-0061 DIOXIN, contaminant of the herbicide 2,4,5-T, cause of animal deaths and human illness in Missouri
- 13-0056 DIOXIN, herbicide contaminant may be linked to "epidemic" of birth defects in Colombia
- 3-0055 DIPHENYL OXIDE, dye carrier, environmental and toxicological data
- 10-0015 DIPHENYLMETHANE-4,4'-DIISOCYANATE, component of new series of urethane prepolymers
- 10-0022 DIPHENYLMETHANE DIISOCYANATE, growing polyurethane market will require more
- 10-0014 DIPHENYLMETHANE DIISOCYANATE, respiratory hazards
- * 7-0038 DISODIUM 4,4'-BIS[[4-AMILINO-6-(N-METHYL-2-HYDROXYETHYLAMINO)-1,3,5-TRIAZIN-2-YL]AMINO]STILBENE-2,2'-DISULFONATE, fluorescent whitening agent, toxicity studies
- * 7-0038 DISODIUM 4,4'-BIS[[4-AMILINO-6-MORPHOLINO-1,3,5-TRIAZIN-2-YL]AMINO]STILBENE-2,2'-DISULFONATE, fluorescent whitening agent, toxicity studies
- * 7-0038 DISODIUM 4,4'-BIS(2-SULFOSULFONYL)BIPHENYL, fluorescent whitening agent, toxicity studies
- 26-0041 DISSOLVED ORGANIC MATTER, effects on surface charge characteristics of phytoplankton
- 17-0054 DISSOLVED OXYGEN PROFILE, new method for predicting in receiving waters
- 8-0021 DRINKING WATER, potential carcinogen
- 10-0042 DRINKING WATER, questions on mechanisms for production of halogenated organics
- * 15-0009 DRINKING WATER, review of potential contaminants
- 3-0056 DYE CARRIER SOLVENTS, environmental and toxicological data
- 17-0029 DYE CARRIERS, environmental guide to selection
- 73-0046 DYE RED NO.2, apparently not fetal toxicant
- 13-0046 DYE RED NO.2, cleared of fetal toxicity potential but not of carcinogenic potential
- 13-0045 DYE RED NO.2, may still be tested for possible carcinogenic properties
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- 20-0043 ECOKINETIC ANALYSIS of chemical residues
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- 20-0042 ECOLOGICAL RELATIONSHIPS, microorganisms
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- 22-0014 ECOLOGY, literature list
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- 13-0027 ECOSYSTEM, stochastic model
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- 15-0050 ECOSYSTEMS, effect of deep-sea mining on marine life
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- 7-0036 ECOSYSTEMS, man as integral component of
- 25-0024 ECOSYSTEMS, menhaden kills from coastal power plants
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- 25-0022 ECOSYSTEMS, stability of complex systems
- 11-0017 ECOSYSTEMS, structure, function, and management of
- 3-0063 EDC-TAR, vinyl chloride by-product, microorganism toxicity
- 3-0060 EDC TARS, vinyl chloride by-product, marine pollutant
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- 26-0021 ENERGY DEVELOPMENT in arid U.S. regions could deplete water supplies and alter the environment
- 7-0037 ENERGY FLOW in ecology, human biology and social science
- 4-0025 ENFLURANE, biotransformation
- * 20-0022 ENFLURANE, lower limits of flammability
- 6-0046 ENVIRONMENTAL CARCINOGENS, problems in identifying and controlling numerous compounds produced
- 6-0045 ENVIRONMENTAL CARCINOGENS, problems with pesticides
- 1-0051 ENVIRONMENTAL LAWS, Pennsylvania
- 10-0047 ENVIRONMENTAL MONITORING, Handbook
- 17-0052 ENVIRONMENTAL MONITORING, international symposium announced
- 14-0045 ENVIRONMENTAL MUTAGENIC HAZARDS, mutagenicity screening
- 4-0052 ENVIRONMENTAL ODORS, human responses
- 7-0052 ENVIRONMENTAL POLLUTANTS, sources, health and economic effects, control
- 3-0067 ENVIRONMENTAL RESEARCH CENTERS, World Directory
- 6-0051 ENVIRONMENTAL TOXICOLOGY, conference proceedings

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- 14-0051 ETHYL ALCOHOL, mutagenicity in mice
 5-0026 ETHYL BROMOACETATE, carcinogenic activity
 17-0056 ETHYLENE BROMIDE, not a safe or effective fumigant for apples
 2-0053 ETHYLENE CHLORIDE, potential carcinogen and mutant
 *21-0024 ETHYLENE DIBROMIDE, effects of temperature on fumigant residues
 16-0121 ETHYLENE DIBROMIDE, genetic effects
 21-0023 ETHYLENE DIBROMIDE, hepatotoxic potential
 *25-0036 ETHYLENE DIBROMIDE, potential carcinogen
 *26-0030 ETHYLENE DIBROMIDE, potential carcinogen in rats and mice
 *21-0023 ETHYLENE DIBROMIDE, potential stomach carcinogen in rats and probably in mice
 19-0037 ETHYLENE DIBROMIDE, promotes formation of hydrobromic acid in exhaust system of cars, leading to corrosion of the system
 *26-0030 ETHYLENE DIBROMIDE, widely used grain fumigant to be investigated as potential carcinogen
 *26-0031 ETHYLENE DIBROMINE, now being used to combat infestation of mountain pine beetles in several western states
 12-0027 ETHYLENE, market potential viewed in light of demands for styrene, polyvinyl chloride and other materials
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 12-0001 ETHYLENEIMINE, OSHA emergency standard in litigation
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 5-0011 ETHYLENEIMINE, potential in effluent purification
 2-0016 ETHYLENEIMINE, safety standards
 17-0008 ETHYLENEIMINE, Supreme Court upholds occupational standards
 5-0010 ETHYLENEIMINES, structure relative to mechanism of carcinogenicity
 3-0061 ETHYLENETHIOUREA, carcinogen by-product from 2-Mercaptoimidazole gaskets
 3-0002 ETHYLFLUOROACETATE, intermediate in cancer drug
 *14-0031 2-ETHYLHEXANOL AND TEREPHTHALIC ACID, derivative offered as plasticizer for PVC
 * 5-0006 2-ETHYLHEXYL DIPHENYL PHOSPHATE, flame retardant
- *19-0010 FC-22 (CHF_2Cl), possible substitute for FC-12 (CF_2Cl_2) suggested as short-term solution to current fluoro arvon/ozon problem
 *16-0036 FERRIC OXYHYDROXIDE MICROPARTICLES IN WATER, paper presented at conference on biological effects of ingested asbestos
 *14-0008 FIBER GLASS, potential health hazard and carcinogen
 16-0116 FIBROUS GLASS INSULATION, health of retired workers
 17-0011 FIRE RETARDANT, modified THPOH solution releases less formaldehyde
 15-0043 FIRE RETARDANT COMBUSTION PRODUCTS from a reactive phosphate fire retardant in polyurethane foam found toxic to rats
 13-0010 FIRE RETARDANT MATERIALS for fibers and plastics discussed in book on fire-retardant textiles
 *21-0003 FIRE RETARDANT PLASTICIZERS FOR PVC, Kronitex 100 triaryl phosphate material replacement for tricresyl phosphate
 17-0009 FIRE RETARDANTS, six-month index of information on
 6-0049 FISH KILLS BY POLLUTION, 1972, second highest in 13 years
 16-0122 FISH TUMORS, potential carcinogenic indicators
 20-0017 FLAME INHIBITION, by potassium compounds
 21-0006 FLAME-PROOFING, new agents made from propargyl alcohol, phosphoric acid and halogens work with both natural and man-made fibers
 20-0018 FLAME RETARDANCE, combustion of flexible polyurethane foam
 5-0013 FLAME RETARDANCE of cotton/modacrylic blend fibers
 20-0020 FLAME RETARDANT, Dow Chemical announces FR-1540 for unsaturated polyester resins
 14-0011 FLAME RETARDANT, finish for cotton fabrics based on urea, phosphate salt, chlorinated polymer and antimony oxide
 6-0012 FLAME RETARDANT, Pyrol 76 for cellulose, significant new product
 17-0010 FLAME RETARDANT, new product (Pyrosan 497) for polyester and acetate fabrics
 18-0008 FLAME-RETARDANT CHEMICALS, formulas of those used in consumer products must be given to Consumer Product Safety Commission for assessment of real or potential hazards
 8-0014 FLAME RETARDANT PANELS from isocyanurate foams
 10-0009 FLAME RETARDANT FABRICS, production system
 15-0022 FLAME RETARDANTS, brominated cyclic compound applies as aqueous dispersion with antimony oxide as synergist
 8-0015 FLAME RETARDANTS (BROMINATED), market potential expected increase
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 15-0019 FLAME RETARDANTS, chart of available chemicals, manufacturers, end uses, cost, applicable standards
 25-0012 FLAME RETARDANTS, criteria for acceptable compounds for flame-resistant synthetic polymers
 12-0006 FLAME RETARDANTS, effect of impurities, cotton fabric finishes
 16-0075 FLAME RETARDANTS, effect on the emissions from slash burning (pine fuel beds)
 22-0007 FLAME RETARDANTS, effective in injection molding compound
 10-0008 FLAME RETARDANTS for fibers and fabrics, review
 20-0019 FLAME RETARDANTS, for plastics, large and increasing market spurs research efforts for new products
 9-0020 FLAME RETARDANTS, for polyester fibers/yarn under development at NL Industries
 5-0018 FLAME RETARDANTS, for textiles
 14-0010 FLAME RETARDANTS, for textiles, twenty-six new products introduced in 1974
 12-0007 FLAME RETARDANTS, GE adds two grades to its Moryl phenylene/oxide-based flame retarding resins
 20-0021 FLAME RETARDANTS, in plastics, potential toxicity
 3-0002 FLAME RETARDANTS, in polyurethanes, sensory irritation effects of decomposition products
 3-0025 FLAME RETARDANTS, in short supply
 9-0030 FLAME RETARDANTS, market slowdown predicted
 15-0020 FLAME RETARDANTS, market volume may reach \$570 million by 1983
 17-0012 FLAME RETARDANTS, opposition to use in all clothing
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- 26-0001 FLAME RETARDANTS, overview of types used in plastics, consumption patterns, marketing data
6-0013 FLAME RETARDANTS, phosphorus compounds for cellulosic fabrics
1-0011 FLAME RETARDANTS, plastics
5-0014 FLAME RETARDANTS, P-W containing silicones may have potential for cotton
1-0012 FLAME RETARDANTS, polyurethanes/foams
1-0010 FLAME RETARDANTS, polyurethanes
15-0021 FLAME RETARDANTS, producers report 50% sales decline but market recovery anticipated
3-0023 FLAME RETARDANTS, radiation-induced fixation in textiles
4-0017 FLAME RETARDANTS, research for cotton-polyester fabrics
10-0010 FLAME RETARDANTS, review of patents on preparation and application of
17-0012 FLAME RETARDANTS, seven major end-use markets may consume 730 million pounds by 1978
20-0016 FLAME RETARDANTS, teratogenicity of polybrominated biphenyls in mice
6-0013 FLAME RETARDANTS, titanium tetrachloride or titanium sulfate for cellulosic fabrics
15-0018 FLAME RETARDANTS, variety of chemicals, chemical side-effect problems, and application problems plague textile finishers
11-0008 FLAME RETARDANTS AND PARTICULATES from wood fires
13-0011 FLAMMABILITY STANDARDS FOR FABRICS may cost consumers an added \$6 billion per year
10-0036 FLEXICOOKING, process to convert refinery vacuum residuum into liquids and gases in clean plant environment
4-0033 FLUORESCENT WHITENING AGENTS, new compounds
*14-0029 FLUORESCENT WHITENING AGENTS, acute fish toxicity and accumulation studies
* 9-0034 FLUORESCENT WHITENING AGENTS, analysis
*13-0032 FLUORESCENT WHITENING AGENTS, better brighteners when sulfonamide group present
* 3-0039 FLUORESCENT WHITENING AGENTS, production in USSR
* 7-0038 FLUORESCENT WHITENING AGENTS, toxicity, mutagenicity, teratogenicity
2-0019 FLUORESCENT WHITENERS, laundry products
24-0038 FLUORIDATION, potential health hazard
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19-0032 FLUORIDE POLLUTION, effects on timber and livestock
6-0015 FLUORINATED ETHYLENE-PROPYLENE POLYMERS, chemically-resistant containers for high-purity chemicals
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*12-0010 FLUORINATED SOLVENT, new from Du Pont is Freon TES containing trichlorotrifluoroethane
7-0018 FLUOROALKANES, cardiac toxicity studies, dogs
*25-0016 FLUOROALKANES, concentrations associated with cardiac conduction system toxicity
7-0018 FLUOROALKANES, inhalation toxicity
*14-0013 FLUOROCARBON 12, cardiovascular effects in rabbits from inhalation
*21-0007 FLUOROCARBON-12, effects on animals
*21-0007 FLUOROCARBON-114, effects on animals
*13-0015 FLUOROCARBON AEROSOL PROPELLANTS, Congressional hearings could lead to ban on their use in pressure packages
8-0018 FLUOROCARBON AEROSOL SPRAY PROPELLANTS, ban demanded
*10-0011 FLUOROCARBON ANESTHETICS, hydrogen bond breaking
*10-0011 FLUOROCARBON ANESTHETICS, role in mitosis
*23-0008 FLUOROCARBON PROPELLANTS (F-11 AND F-12), IMDS recommends ban on use by January 1978
* 9-0015 FLUOROCARBON PROPELLANTS, petition to ban filed by Natural Resources Defense Council
*10-0013 FLUOROCARBON PROPELLANTS, safe in normal use according to medical research studies
*26-0007 FLUOROCARBON PROPELLANTS, used to smaller degree by S.C. Johnson, Inc. because substitute propellants are cheaper
*13-0015 FLUOROCARBON PROPELLANTS, what is answer to great increase in ozone layer during 1957-1970, when their production was at high level
6-0017 FLUOROCARBONS, aerosol propellants for asthma treatment, fate of in man and rat
*24-0015 FLUOROCARBONS, as propellants in aerosols are "safe when used as directed" according to industry testimony before CPSC
5-0023 FLUOROCARBONS, atmospheric hazards
7-0020 FLUOROCARBONS, blood levels related to cardiac sensitization
2-0022 FLUOROCARBONS, carcinogenic and genetic effects
*25-0015 FLUOROCARBONS, cardiac arrhythmias in hypoxic rabbits during aerosol propellant inhalation
7-0020 FLUOROCARBONS, cardiac sensitization
6-0015 FLUOROCARBONS, chemically-resistant containers for high-purity chemicals
*18-0012 FLUOROCARBONS, contributors of free chlorine in stratosphere
8-0019 FLUOROCARBONS, controversy over fluorocarbon aerosol/ozone depletion
*23-0007 FLUOROCARBONS, current environmental and health problems indicate a possible slowdown in sales in the \$3-billion/year aerosol industry
* 9-0019 FLUOROCARBONS, DuPont ups production of Freons 113 and 114 at new unit in Corpus Christi, Texas
5-0023 FLUOROCARBONS, effect on ozone layer of stratosphere
*21-0007 FLUOROCARBONS, effects on animals
2-0023 FLUOROCARBONS, environmental effects research
*10-0012 FLUOROCARBONS, environmental hazards and economic impact of possible ban on production
*22-0009 FLUOROCARBONS, EPA authorizes study on
*24-0008 FLUOROCARBONS, FDA will ask food, drug and cosmetic manufacturers for information on products containing them, amount used and how distributed
3-0054 FLUOROCARBONS, Foamex process
1-0013 FLUOROCARBONS, hair sprays
*20-0024 FLUOROCARBONS, high concentrations of chlorofluorocarbons measured in snow in south polar area indicating trace gases in atmosphere are being precipitated out by polar ice
*24-0011 FLUOROCARBONS, IMDS concludes fluorocarbons released to air are legitimate cause for concern and recommends restrictions be imposed on their use by January 1978
*24-0009 FLUOROCARBONS, IMDS report criticized for ignoring high concentrations of methyl chloride (potential source of chlorine) in the troposphere
*24-0009 FLUOROCARBONS, IMDS report criticized for limited review of ion molecular reactions, a possible major atmospheric sink for chlorine
*24-0009 FLUOROCARBONS, IMDS report discussed in relation to its economic impact on the air conditioning and refrigeration industry
*23-0008 FLUOROCARBONS, IMDS report recommends banning the use of fluorocarbons, especially F-11 and F-12 by January 1978
*13-0012 FLUOROCARBONS, in aerosols, evaluation of potential destruction of earth's ozone layer must include effects of dust and chemical particles in the atmosphere

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*14-0016	FLUOROCARBONS, industry and government actions to resolve controversy over potential effects on stratospheric ozone layer
*18-0009	FLUOROCARBONS, industry establishes Council on Atmospheric Science (COAS) to coordinate factors of ozone/fluorocarbon problem
*16-0076	FLUOROCARBONS, industry-sponsored research studies on
*22-0010	FLUOROCARBONS, industry study of ozone problems
2-0021	FLUOROCARBONS, inhalation effects
*16-0080	FLUOROCARBONS (F-11 AND F-12), inhalation effects in man
*20-0027	FLUOROCARBONS, long-range transport in atmosphere
2-0017	FLUOROCARBONS, mutagenic effects
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* 9-0016	FLUOROCARBONS, NAS and others to study ozone depletion problem
* 9-0017	FLUOROCARBONS, NAS to study re effect on ozone layer in stratosphere and possible resulting carcinogenic effects
*22-0011	FLUOROCARBONS, National Academy of Sciences ozone study
* 9-0015	FLUOROCARBONS, National Academy of Sciences will study effect on atmosphere
*26-0008	FLUOROCARBONS, new evidence claimed to prove conclusively that fluorocarbon gases are destroying stratospheric ozone
8-0020	FLUOROCARBONS, no evidence of environmental harm seen in industry-sponsored research
*13-0014	FLUOROCARBONS (F-11 AND F-12), non-flammable, chemically inert, low degree of toxicity
7-0022	FLUOROCARBONS, occurrence in remote areas and in surface seawater
*17-0015	FLUOROCARBONS, one industry president advises to advise public not to panic over the "ozone" theory
2-0022	FLUOROCARBONS, operating room hazards
*16-0077	FLUOROCARBONS/OZONE, controversy still debated
*19-0010	FLUOROCARBONS/OZONE, discussions of potential hazards of interactions plus current and planned research
*19-0012	FLUOROCARBONS/OZONE, possibility of no great increase in ultraviolet radiation could lie in potential regeneration of the ozone lost in the stratosphere by oxygen in lower atmosphere
*19-0018	FLUOROCARBONS/OZONE, potential adverse biological effects on aquatic life and on plants
*19-0009	FLUOROCARBONS/OZONE, potential effects on life (human, animal, plant) can be discovered only through research studies on individual species and complex ecosystems
*19-0008	FLUOROCARBONS/OZONE, potential mutagenic effects on living organisms
*19-0008	FLUOROCARBONS/OZONE, review of current controversy from technical standpoint
*11-0009	FLUOROCARBONS/OZONE, theory and potential skin cancer results
*25-0014	FLUOROCARBONS, photochemical stabilities
*24-0012	FLUOROCARBONS, potential ban or limitation on use would cut off large segments of markets for hydrofluoric acid, carbon tetrachloride, chloroform, and ethanol
*24-0012	FLUOROCARBONS, potential ban or limitation on use would drastically cut work force in refrigeration industry and also affect chemical industry employment
6-0014	FLUOROCARBONS, potential cardiac toxicants
*15-0026	FLUOROCARBONS, potential cardiotoxicity in man and animals
*24-0012	FLUOROCARBONS, potential economic impacts of restriction of fluorocarbon production
*17-0013	FLUOROCARBONS, potential heart hazards
*18-0014	FLUOROCARBONS, potential ozone depletion could reduce formation of cholecalciferol by the skin leading to femoral fractures in the elderly
*20-0028	FLUOROCARBONS, potential use as artificial blood substitutes
*20-0028	FLUOROCARBONS, properties and syntheses
7-0021	FLUOROCARBONS, research on ozone depletion at high altitudes
*13-0013	FLUOROCARBONS, review of their possible effect on the stratosphere
*25-0014	FLUOROCARBONS, routine measurement of in air
*21-0007	FLUOROCARBONS, safe when used as recommended but potentially hazardous when deliberately inhaled
8-0017	FLUOROCARBONS, safety studies on aerosol propellants in man and animals
*21-0009	FLUOROCARBONS, scientists urge Congress to authorize study of problem and to fund research on effects of increased UV radiation
*15-0024	FLUOROCARBONS, synthesis of structurally unusual compounds by direct fluorination
8-0018	FLUOROCARBONS, up to 1.5 million cases of skin cancers worldwide predicted within 25 years. if use of propellants continued
8-0019	FLUOROCARBONS, various research studies underway on ozone-destroying reactions
5-0059	FLUOROCEMICALS, new use as artificial blood and breathable liquids
5-0017	FLUOROCEMICALS, use in flame retardant formulation
* 9-0013	FLUOROCHLOROCARBONS, contributors of halocarbon chlorine entering stratosphere vs non-fluorinated contributors
*19-0013	FLUOROCHLOROCARBONS, theory that their effect on stratosphere may be that they will continue to grow to critical levels rather than that they have special stratospheric reactivity not held by chlorocarbons
*14-0012	FLUOROCHLOROHYDROCARBONS AND OZONE, interrelationships to be studied by federal interagency task force
4-0018	FLUOROETHYLENES, inhalation hazard
*18-0017	FLUOROPOLYMERS, heat capacity of
8-0053	FOOD DYE, potential carcinogen and fetotoxicant
25-0039	FORMALDEHYDE, effect on embalmers
9-0005	FOSIL FUELS, potential health hazard due to arsenic content
20-0026	FW-1340, new flame retardant from Dow Chemical has high bromine content and contains maleic, fumaric, and o-phthalic acid links in the polymer chain
7-0018	FREON 11, cardiac toxicity studies, dogs
7-0018	FREON 11, inhalation toxicity
3-0028	FREON 11, vapor effect on heart auricles
8-0017	FREON 11 and 12, human exposure studies
2-0017	FREON C-318, mutagenic effects
*12-0010	FREON TES, new fluorinated solvent from Du Pont
*20-0026	FREON TF, aerosol replaces DOP in leak test method for HEPA filters
7-0019	FREON AEROSOL PROPPELLANTS, cardiac toxicity studies, rats and cats
7-0019	FREON AEROSOL PROPPELLANTS, cellular mechanisms in cardiac toxicity
2-0020	FREONS, global threat
1-0013	FREONS, inhalation hazards
*14-0014	FREONS, potential effects on stratospheric ozone concentrations

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- 7-0023 FIBROS, potential health hazard to beauty shop operators
 *14-0014 FIBROS, potential source of stratospheric chlorine
 10-0008 FIBROL 76, flame retardant finish for cellulose
 5-0012 FIBROL 76, new flame retardant for cellulose
- 21-0033 GASOLINE, TLV calculated by ACGIH emphasizes aromatic hydrocarbon content
 16-0121 GASOLINE ADDITIVES, genetic effects
 2-0017 GENETRON-23, mutagenic effects
 2-0017 GENETRON-152A, mutagenic effects
 19-0003 GEOCHEMISTRY, of arsenic, antimony, mercury, and related elements in sediments of Puget Sound
 16-0115 GEOCHEMISTRY AND ENVIRONMENT, relationship between geographic distribution of certain elements and patterns of disease
- 15-0060 GEOTHERMAL POWER PLANT EFFLUENTS, their chemical, physical and biological consequences
 5-0026 GLYCOL SULFATE, carcinogenic activity
- 25-0038 HAIR DYES, mutagenicity
 17-0041 HAIR DYES, potential carcinogens and mutagens
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 17-0014 HALOCARBONS, study to assess probable effects on stratospheric ozone
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- *16-0082 HALOTHANE UPTAKE by coacervate systems
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- 3-0072 HAZARDOUS CHEMICALS spill regulations
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- 9-0023 HEXACHLOROBENZENE, bioconcentration in fish
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8-0024	HEXACHLOROBENZENE, effect on liver, rats
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*12-0011	HYDRAZINE HYDRATE, increased demand predicted by 1980, with fast market increase if hydrazine-based fuel cells sell
* 9-0025	HYDRAZINE HYDRATE, Mobay Chemical building 10,000 ton/year plant at Kansas City, Mo.
* 9-0026	HYDRAZINES, quenching of photoexcited ketones in water by
* 8-0027	HYDRAZINES, photoelectron spectra of
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1-0015	ISOCYANATES, respiratory effects
1-0016	ISOCYANATES, respiratory effects
12-0012	ISOCYANATES, Upjohn in LaPorte, Texas, increases capacity to 300 million lb/yr

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- 8-0014 ISOCYANURATE FOAMS, for panel lamination
 * 3-0006 ISODIBUTYL DIPHENYL PHOSPHATE, flame retardant
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- 25-0044 KETONES, OSHA proposes job health standards on six industrial solvents
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- 13-0049 MACROCYCLIC POLYETHERS, potential toxicity
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 14-0024 4,4'-METHYLENBIS(2-CHLOROANILINE) (MOCA), court ruling voiding OSHA's proposed standard based on no known evidence of human cancers from

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20-0050	4,4'-METHYLENEBIS(2-CHLOROANILINE) (MOCA), curing agent for new moisture-resistant polyester-based polyurethanes
10-0019	4,4'-METHYLENEBIS(2-CHLOROANILINE) (MOCA), curing agent for new series of urethanes
10-0005	4,4'-METHYLENEBIS(2-CHLOROANILINE) (MOCA), field tests for determining in factory atmospheres
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*15-0034	1-METHYLHYDRAZINE, morphological and biochemical effects of, in rats and mice
*21-0004	METHYLSUBSTITUTED TRIPHENYL PHOSPHATES, in automobile exhaust particulates
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16-0097	MODEL ECOSYSTEMS, crop ecosystem simulation used in agricultural pest management program
22-0013	MODEL ECOSYSTEMS, fate and biodegradability of benzene in
20-0044	MODEL ECOSYSTEMS, guidebook on coastal ecology
2-0033	MODEL ECOSYSTEMS, health assessment
15-0039	MODEL ECOSYSTEMS, hydrocarbon burden of mussels as potential monitors of hydrocarbon pollution
15-0036	MODEL ECOSYSTEMS, impact of air pollution on forest ecosystems
26-0014	MODEL ECOSYSTEMS, measuring growth in microecosystems
14-0026	MODEL ECOSYSTEMS, NAS releases report of IEP study applying systems analysis to workings of ecosystems
15-0037	MODEL ECOSYSTEMS, radionuclides in terrestrial and aquatic ecosystems
14-0027	MODEL ECOSYSTEMS, stability and complexity in
6-0028	MODEL ECOSYSTEMS, stability of a feasible random ecosystem
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5-0036	MODEL ECOSYSTEMS, toxicity of metallic pollutants to mollusks
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18-0024	MODEL ECOSYSTEMS, useful for predicting behavior of pesticides in environment
3-0026	MONOCHLORODIFLUOROMETHANE, inhalation toxicity, monkeys
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23-0024	MUTAGENESIS, molecular and environmental aspects of

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- 23-0006 MUTAGENICITY, data to be included by IARC in program to evaluate potential carcinogenicity of chemicals to man
- 9-0046 MUTAGENICITY, toxicological evaluation
- 9-0044 MYCOTOXINS, health hazards reviewed
- 26-0015 1-NAPHTHOL, degradation by marine microorganisms
- 24-0004 NAPHTHYLAMINE, dye manufacturers discontinue naphthylamine-based special dyes because of problems arising from OSHA regulations
- 10-0005 1-NAPHTHYLAMINE, field tests for determination in factory atmospheres
- 10-0020 o-NAPHTHYLAMINE, *in vitro* carcinogenic testing
- 2-0034 o-NAPHTHYLAMINE, incinerator residue
- 12-0001 o-NAPHTHYLAMINE, OSHA emergency standard in effect
- 9-0047 2-NAPHTHYLAMINE, in mutagenic studies
- *16-0068 3-NAPHTHYLAMINE, bladder carcinogen in dogs but not in rats, rabbits, or guinea pigs
- 23-0006 3-NAPHTHYLAMINE, carcinogen in man now shown to be mutagen
- 7-0006 3-NAPHTHYLAMINE, health hazard to workers
- 10-0030 3-NAPHTHYLAMINE, *in vitro* carcinogenic testing
- 13-0001 4-NAPHTHYLAMINE, OSHA emergency standard in effect
- *15-0011 5-NAPHTHYLAMINE, potential occupational carcinogen without assigned TLV
- *16-0068 5-NAPHTHYLAMINE, weak carcinogen for mice
- 16-0100 NAPHTHYLAMINES, concern expressed about potential carcinogenicity of, despite lack of evidence
- * 9-0015 NATIONAL ACADEMY OF SCIENCES to conduct study on fluorocarbons and the atmosphere
- 3-0034 NATURAL GAS PIPELINES, Alaska, environmental impact
- 17-0035 NEOPRENE, potential carcinogen
- 19-0045 NICKEL, potential carcinogen for nickel smelting and refining workers
- 19-0045 NICKEL, potential skin disease hazard in implanted therapeutic devices and prostheses
- 4-0048 NICKEL, skin rash
- 24-0024 NITRILOTRIACETATE, photochemical degradation of in natural water systems yields formation of iminodiacetate
- 17-0028 NITRILOTRIACETATE, use as synthetic detergent sequestrant seemed promising until halted by U.S. Attorney General
- 5-0038 NITRILOTRIACETIC ACID, biological waste treatment use
- 5-0026 NITRILOTRIACETIC ACID, carcinogenic activity
- 26-0016 NITRILOTRIACETIC ACID, effect of growth on algae
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- 15-0040 NITRILOTRIACETIC ACID, non-toxic to *Cymodulinus brevis* with no b.ostimulatory effects noted
- 13-0029 NITRILOTRIACETIC ACID, potential carcinogen, rats
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- 20-0046 NITRILOTRIACETIC ACID and NTA-metal ion complexes, biodegradation
- 5-0068 NITROBENZENE, potential health hazard
- 24-0042 NITROGEN DIOXIDE, potential carcinogen
- *12-0003 p-NITROPHENYL PHOSPHATE, in study of p-nitrophenyl phosphatase activity of membranes from animal leucocytes
- 23-0023 NITROPHENYLENEDIAMINE DYES IN HAIR COLORANTS, potential mutagens and carcinogens
- 24-0042 NITROSAMINES, potential carcinogens may be link between ambient NO₂ and cancer death rates
- * 8-0026 NITROSODIMETHYLAMINE (COMPONENT OF UNSYMMETRICAL DIMETHYLHYDRAZINE), potential carcinogen
- 4-0047 N'-NITROSOMORPHICOTINE, potential carcinogen, in tobacco
- 22-0033 NOBLE METALS, potential environmental contaminants
- 7-0024 NON-CHLORINATED FLUOROCARBON PROPELLANTS, potential hazard via dissociation products
- * 9-0013 NON-FLUORINATED HALOCARBONS, contributors of halocarbon chlorine entering stratosphere
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- 24-0046 OCEAN DUMPING, may be damaging the marine ecosystem in New York Bight
- 14-0044 OCEAN DUMPING, review of regulations, sites, criteria, and permits
- 20-0065 OCEAN INCINERATION, pros and cons of its use for disposal of chlorinated hydrocarbon wastes
- 25-0012 OCTABROMOBIPHENYL, evaluation of as a flame-retardant chemical
- 25-0012 OCTABROMOBIPHENYL, review of its chemical/physical properties, toxicology, and environmental effects
- 26-0001 OCTABROMOBIPHENYL, toxicology of
- 3-0026 OCTAFLUOROCYCLOBUTANE, inhalation toxicity, monkeys
- 26-0040 OIL, acute effects of oil and oil/dispersant mixture on larvae of Baltic herring
- 26-0039 OIL, improving microbial degradation of oily wastes in soil
- 13-0028 OIL, potential damage to ecosystems
- 12-0031 OIL, potential environmental effects in ocean waters
- 2-0057 OIL CONTAMINANT, plant and animal studies
- 13-0034 OIL CONTAMINATION, effect on human health not cause for alarm
- 14-0046 OIL POLLUTION, effect on nucleic acids of algae
- 16-0126 OIL POLLUTION, potential biological hazard for Alaskan crabs
- 14-0033 OIL SHALE, adequate water supplies available for development with minimal adverse effects on quality of western water resources
- 13-0038 OIL SHALE, Colorado project will not significantly affect water quantity and quality
- 25-0030 OIL SHALE, disposal and environmental effects of carbonaceous solid wastes from commercial operations
- 26-0020 OIL SHALE, economic study indicates in-situ processing could compete with above-ground processing
- 10-0016 OIL SHALE, environmental problems
- 11-0023 OIL SHALE, planned Utah shale mining and processing development pending detailed environmental study program
- 6-0033 OIL SHALE, possible production of 100,000-bbl/day by 1980, lesser production by 1978
- 6-0033 OIL SHALE, process that retorts rough crushed shale seen less of an environmental problem than processes yielding finer crushed shale
- 9-0039 OIL SHALE, project development plans underway by Gulf Oil and Standard Oil (Ind.)
- 8-0036 OIL SHALE, water sources for development
- 25-0029 OIL SHALE INDUSTRY, pollution problems and research needs
- 4-0049 OIL SPILLS, ground saturation
- 15-0036 OIL SPILLS, potential source of tumors in marine animals

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- 17-0051 OIL SPILLS, study of effects on marine life in sediment
 * 3-0032 OPTICAL BRIGHTENERS, allergies
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 12-0007 OPTICAL BRIGHTENERS, four new products introduced in 1974 for textiles
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 13-0048 ORGANOMETALLIC POLYMERS, negligible environmental impact as anti-fouling materials
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 *24-0007 OZONE, theoretical chemical-diffusion model to study effect of human activities on the ozone layer
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 *18-0018 PERFLUORODECALIN, used as artificial blood and breathable liquid
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 *16-0060 N-PHENYL-S-NAPHTHYLAMINE, new analytical technique for measurement of in rubber antioxidants

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- 2-0031 ***o*-PHENYLINDOLE**, health hazard
- 24-0036 PHOSPHATE, Monsanto offers replacement compound to laundry detergent makers
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- 5-0015 PHOSPHORAMIDE DERIVATIVES, new flame retardants for cotton textiles
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- 5-0012 PHOSPHORUS INSECTICIDE, nerve damage
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- 7-0036 PHOTOCHEMICAL OXIDANTS, physiological dysfunction hazards
- 9-0030 PHOTODEGRADABLE POLYMERS, biodegradation
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- *18-0028 PHthalate ESTERS, microbial degradation
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- * 9-0035 PHthalate ESTERS, toxicity and health threats
- *14-0031 PHthalate PLASTICIZER, new product offered as general-purpose, low-volatility plasticizer for PVC
- *13-0033 PHthalate PLASTICIZERS, health status of USSR workers handling
- *17-0030 PHthalates, analytical procedure for analysis of in animal tissue
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- *18-0027 PHthalates, heart rate depressors in goldfish
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- 13-0032 PLASTICS, potential hazard to marine life
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- *13-0019 PLASTICS, used to aid containment of solids, liquids, and vapors containing plutonium in nuclear processing plants
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- 21-0028 POLONIUM-210, potential lung carcinogen in hamsters
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- 17-0007 POLYBROMINATED BIPHENYLS, potential cause of liver damage
- 20-0016 POLYBROMINATED BIPHENYLS, teratogenicity in mice
- 8-0010 POLYBROMINATED BIPHENYLS, toxic effects, cattle
- 17-0007 POLYBROMINATED BIPHENYLS, toxicity greater than that of polychlorinated biphenyls
- 10-0008 POLYBROMOBIPHENYL, potential flame retardant for Nylon 66
- 10-0008 POLYBROMOBIPHENYL OXIDE, potential flame retardant for Nylon 66
- 7-0053 POLYCARBONATE DECOMPOSITION PRODUCTS, sensory irritation
- 23-0012 POLYCHLORINATED BIPHENYLS, comparison of environmental data with data on brominated biphenyls

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- 24-0034 POLYCHLORINATED BIPHENYLS (PCB'S), limited use or complete ban called for by Michigan groups because high levels still found in lake fish
- *18-0016 POLYCHLOROTRIFLUOROETHYLENE, relaxation phenomena deduced from dielectric and ultrasonic measurements
- 17-0059 POLYCYCLIC AROMATIC HYDROCARBONS, the analytical, geochemical and environmental implications of their presence in soils and recent marine sediments
- 14-0034 POLYDIMETHYL SILOXANE, potential alternative for PCB's now being promoted by Dow as alternative for PCB's as transformer fluid
- 18-0031 POLYETHER-URETHANES, morphology of
- 8-0013 POLYETHYLENEIMINE, flame retardant component
- 5-0011 POLYETHYLENEIMINE-MODIFIED WOOL FIBERS, adsorption of mercury by
- 26-0018 POLYETHYLENES, potential tumorigenics when implanted in rats
- 26-0044 POLYIMIDES, new high-temperature adhesives for titanium metal alloys are based on Gulf Oil's benzophenone tetracarboxylic acid dianhydride
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- *12-0009 POLYTETRAFLUOROETHYLENE, morphology
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- 15-0043 POLYURETHANE, extreme toxicity (rats) from combustion products of a fire-retarded foam
- 12-0020 POLYURETHANE, fire hazard of rigid insulation
- 17-0032 POLYURETHANE, new cast-polyurethane tire is low in cost and has good road properties
- 7-0042 POLYURETHANE, recycling technique for foam scrap
- 3-0025 POLYURETHANE, sensory irritation effects of decomposition products
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- 11-0021 POLYURETHANE FOAM IN PLACE PACKAGING, toxicogenic hazards and environmental effects
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- 20-0051 POLYURETHANES, dynamic properties of cast urethane elastomers
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- 5-0019 POLYURETHANES, mechanism of smoke production from added flame retardants
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- 8-0043 POLYVINYL CHLORIDE, fracture toughness
- 18-0034 POLYVINYL CHLORIDE, health hazards, thermal decomposition products of meat packaging films
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- 6-0043 POLYVINYL CHLORIDE, increasing use seen in thermoplastic foam pipes
- 14-0041 POLYVINYL CHLORIDE, industrial preparation of
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- 10-0031 POLYVINYL CHLORIDE, mechanism of dc electrical conductivity
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- * 5-0040 POLYVINYL CHLORIDE, molecular relaxation
- 12-0025 POLYVINYL CHLORIDE, new technology and markets
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- 12-0028 POLYVINYL CHLORIDE, Norak Hydro to produce again after plant modifications and autoclave additions
- 11-0028 POLYVINYL CHLORIDE, one angiosarcoma death in Norwegian worker
- 6-0042 POLYVINYL CHLORIDE, one Norwegian plant shut down pending study of hazards to workers
- 6-0042 POLYVINYL CHLORIDE, packaging found environmentally superior to paper and other packaging
- 14-0040 POLYVINYL CHLORIDE, packaging found environmentally superior to paper and other packaging

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21-0022	POLYVINYL CHLORIDE, potential production from wood
8-0042	POLYVINYL CHLORIDE, producers with old buildings may be harder hit than monomer producers or fabricators by OSHA standards
24-0006	POLYVINYL CHLORIDE, production is potential source of organic micropollutants in water
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8-0039	POLYVINYL CHLORIDE, production to be cut by 50% at Goodyear Tire and Rubber
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*13-0019	POLYVINYL CHLORIDE, radiation limit
13-0035	POLYVINYL CHLORIDE, sales, consumption, supply
18-0033	POLYVINYL CHLORIDE, thermal stability of graft modifications
13-0044	POLYVINYL CHLORIDE, three cases of liver cancer in polyvinyl chloride resin manufacture
* 7-0040	POLYVINYL CHLORIDE, toxicity potential in plastic devices exposed to blood
14-0040	POLYVINYL CHLORIDE AND OTHER PLASTICS PACKAGINGS, found environmentally superior to paper, glass, and metal packaging
24-0028	POLYVINYL CHLORIDE DUST, biologically as active as chrysotile asbestos
24-0028	POLYVINYL CHLORIDE DUST, potential health hazard
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6-0040	POLYVINYL CHLORIDE FILM, new low-temperature cutting unit for supermarket wrapping
6-0040	POLYVINYL CHLORIDE FILM, toxic fume hazard in supermarket wrapping operations
16-0111	POLYVINYL CHLORIDE PIPE, use of is increasing
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11-0024	POLYVINYL CHLORIDE RESIN, new non-polluting product announced in Japan should be in commercial production by March 1975
13-0040	POLYVINYL CHLORIDE RESINS, lower VCM content claimed possible with new venting/air-purging system
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*20-0023	POLYVINYLIDENE FLUORIDE has many uses in pulp and paper industry because of its corrosion resistance
*18-0017	POLYVINYLIDENE FLUORIDE, heat capacity of
*13-0019	POLYVINYLIDENE FLUORIDE, use in nuclear processing plants; radiation limit
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21-0029	RED DYE NO.2, no embryotoxic manifestations in rats according to FDA tests
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17-0040	RODENTICIDE, new acutely toxic product available from Rohm & Haas
24-0049	RODENTICIDE, seven deaths in South Korea may be due to improper use of Vacor, made by Rohm and Haas
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16-0005	SAFE DRINKING WATER ACT OF 1974, strengthens EPA's authority re industrial water pollutants

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- 25-0041 SALINITY, effects on surface charge characteristics of phytoplankton
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- 9-0040 SHALE OIL, environmental and exploitation problems hinder rapid development
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 * 7-0038 SODIUM 2(4-STYRYL-3-SULFOPHENYL)-2H-IMIDAZO[1,2-b]TRIAZOLE, fluorescent whitening agent, toxicity studies
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 * 5-0007 TALC, potential carcinogen
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 15-0042 TETRACHLOROETHYLENE (PERCHLOROETHYLENE), NIOSH seeks information on to develop criteria documents for setting work-place exposure standards
- 8-0047 TETRAETHYLLEAD, substitute antiknock compounds may be hazardous to car engines and to health
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 5-0020 TETRAFLUOROETHANE, fire extinguishing agent, health hazards
 5-0018 TETRAKIS (HYDROXYMETHYL) PHOSPHONIUM CHLORIDE (THPC), flame retardant for textiles

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5-0015 TETRAMETHYLPHOSPHORODIAMIDIC CHLORIDE, starting compound for phosphoramide type flame retardants
5-0070 TETRANITROMETHANE, by-product recovery from TNT production will cut air pollution
16-0125 TETRANITROMETHANE, pollutant from manufacture of TNT converted into nitroform, which can be used in production of high energy missile propellants

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15-0045 THORIUM DIOXIDE, potential liver carcinogen in man
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* 7-0038 TINOPAL 488, fluorescent whitening agent, toxicity, mutagenicity, teratogenicity
* 7-0038 TINOPAL 388, fluorescent whitening agent, toxicity, mutagenicity, teratogenicity
* 7-0038 TINOPAL CBS, fluorescent whitening agent, toxicity, mutagenicity, teratogenicity
* 7-0038 TINOPAL BBS, fluorescent whitening agent, toxicity, mutagenicity, teratogenicity

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13-0036 TRICHLOROETHYLENE, adoption of air pollution rules further restricts its use as a degreasing solvent

6-0032 TRICHLOROETHYLENE, alcohol intolerance
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- 10-0023 TRICHLOROETHYLENE, market demand may drop
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 * 8-0026 UNSYMMETRICAL DIMETHYL HYDRAZINE, threatened shortage following OSHA finding of potential carcinogenic component
 * 3-0039 UNSYMMETRICAL DIMETHYL HYDRAZINE, vapor detection
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 11-0020 URETHANE, carcinogen for the European hamster
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- * 9-0025 URETHANE CHEMICALS, Mobay Chemical trebling capacity at Baytown, Texas
- 10-0021 URETHANE ELASTOMER contains neither TDI nor MDCA, meets OSHA safety requirements
- 8-0035 URETHANE FOAM, use as fire barrier in cold storage/fire door
- 8-0035 URETHANE FOAM, use as insulation for oil storage tanks saves energy
- 19-0033 URETHANE INSULATION, fire hazards include rapid formation of thick, toxic smoke
- 13-0010 URETHANE SANDWICH PANELS, flammability and fire retardance discussed in new book
- 26-0017 URETHANE-TREATED HUMAN CELLS show chemical malignant transformation in vitro
- 18-0030 URETHANES, pyrolysis of flexible urethane foam

- 24-0043 VACOR, new rodenticide may be toxic to humans when ingested
- 24-0049 VACOR, new Rohm and Haas rodenticide, may have caused seven deaths in South Korea
- 16-0118 VANADIUM, model of its fate in urban air shed
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- 1-0034 VINYL CHLORIDE, air pollutant
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- 18-0002 VINYL CHLORIDE, among examples of potentially hazardous chemicals cited as need for passage of toxic bill substances control bill
- 20-0055 VINYL CHLORIDE, among top 50 chemicals showing small growth rate in 1974
- 1-0044 VINYL CHLORIDE, analyses
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- 26-0029 VINYL CHLORIDE, annotated bibliography on health effects of
- 4-0036 VINYL CHLORIDE, arc-coal acetylene as feedstock for
- 14-0042 VINYL CHLORIDE, assessment of emissions control techniques and cost
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- 21-0018 VINYL CHLORIDE, brief review of reported studies on its carcinogenic effects on humans
- 3-0060 VINYL CHLORIDE, by-product persistence as marine pollutant
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- * 4-0009 VINYL CHLORIDE, carcinogen
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- 5-0048 VINYL CHLORIDE, carcinogen, OSHA's problem decision may have far-reaching effects
- 10-0028 VINYL CHLORIDE, carcinogenic potential stirs uncertainty about potential unidentified carcinogens in industry
- 10-0032 VINYL CHLORIDE, carcinogenicity potential could be determined via mutagenicity tests
- 2-0039 VINYL CHLORIDE, carcinogenicity studies
- 15-0044 VINYL CHLORIDE, chromosomal aberrations in workers exposed to
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- 7-0049 VINYL CHLORIDE, control costs at B.F. Goodrich
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- 12-0001 VINYL CHLORIDE, court grants stay on enforcement of OSHA's standard
- 11-0007 VINYL CHLORIDE, court grants stay on timing of OSHA's standard
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- 20-0056 VINYL CHLORIDE, detection using carbon monoxide and carbon dioxide infrared lasers
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- 26-0027 VINYL CHLORIDE, effects of exposure on rats pretreated with phenobarbital
- 15-0045 VINYL CHLORIDE, environmental pathology studies
- 15-0045 VINYL CHLORIDE, environmental pathology studies of liver damage effects may lead to new clinical detection methods
- 11-0027 VINYL CHLORIDE, environmental wastes from production of plastic bottles
- 10-0035 VINYL CHLORIDE, EPA studying its behavior in water
- 19-0036 VINYL CHLORIDE, example of the value of predictive experimental environmental carcinogenesis
- 7-0048 VINYL CHLORIDE, exposure limits in Sweden
- 22-0025 VINYL CHLORIDE, exposure standards final
- 1-0036 VINYL CHLORIDE, exposure studies
- 24-0031 VINYL CHLORIDE, FDA may ban PVC from contact with food if on-going studies show it to be carcinogenic upon ingestion
- 24-0031 VINYL CHLORIDE, FDA may set maximum level of 50 ppb for VC residues in food packaging materials
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- 7-0047 VINYL CHLORIDE, fluid bed catalytic oxidation treats chlorinated wastes
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- 7-0006 VINYL CHLORIDE, health hazard to workers
- 26-0025 VINYL CHLORIDE, human and rodent liver-mediated mutagenicity of VC in *S. Typhimurium* strains
- 22-0030 VINYL CHLORIDE, improved exposure test
- 10-0035 VINYL CHLORIDE, industry and government discuss OSHA standard for exposure
- 22-0029 VINYL CHLORIDE, industry appeal to the U.S. Supreme Court re standards
- 20-0057 VINYL CHLORIDE, industry efforts to meet OSHA standard, improve processing techniques, expand capacities, etc.
- 1-0039 VINYL CHLORIDE, industry research
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- 3-0061 VINYL CHLORIDE, involvement with potential carcinogen
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- 3-0065 VINYL CHLORIDE, liver cancer in PVC fabrication workers
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- 3-0064 VINYL CHLORIDE, liver carcinogen
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8-0038	VINYL CHLORIDE,	new sensitive air monitors for plant production
17-0005	VINYL CHLORIDE,	new studies on occupational carcinogenicity
10-0029	VINYL CHLORIDE,	ninth angiosarcoma case reported out of Goodrich plant
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15-0046	VINYL CHLORIDE,	use of 3,4-dichlorobenzene to trap reactive metabolites formed from vinyl chloride
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13-0001	VINYL CHLORIDE MONOMER, potential carcinogen, spurs industrial testing
17-0036	VINYL CHLORIDE MONOMER, potential carcinogen when ingested
10-0025	VINYL CHLORIDE MONOMER, production capacity increase in doubt but Rohntech Inc. is increasing capacity of new PVC plant in Freeport, Texas
14-0001	VINYL CHLORIDE MONOMER, production in December 1974 was slightly higher than for December 1973 but year's total production was slightly lower than in 1973
*19-0015	VINYL CHLORIDE MONOMER, short-term inhalation toxicity in rats
14-0002	VINYL CHLORIDE MONOMER, U.S. exports decreased in 1974
13-0040	VINYL CHLORIDE MONOMER, venting/air-purging system reportedly cuts content of in PVC resins
16-0108	VINYL CHLORIDE MONOMER, washed from PVC packaging is suspected carcinogen
10-0009	VINYL CHLORIDE/POLYVINYL ALCOHOL FIBERS, flame retardant
*16-0015	VINYL CHLORIDE/POLYVINYL CHLORIDE, effects on public health studied under NIEHS funding
5-0012	VINYL PHOSPHONATE MONOMER, flame retardant for cellulose
14-0011	VINYLDIENE CHLORIDE, copolymer latex used in flame retardant for cotton fabrics
6-0041	VINYLDIENE CHLORIDE, copolymer with vinyl chloride, nonovens, physical properties
10-0008	VINYLDIENE CHLORIDE, flame retardant in wadacrylic fibers
12-0029	VINYLDIENE CHLORIDE, industry sponsors toxicity and mutagenicity studies
25-0031	VINYLDIENE CHLORIDE, mortality experience of workers exposed to low levels of it in an industrial vinyl chloride environment
24-0033	VINYLDIENE CHLORIDE, mutagenic effect noted in bacteria
26-0025	VINYLDIENE CHLORIDE, mutagenicity
5-0025	VINYLDIENE CHLORIDE, potential liver carcinogen
12-0029	
6-0044	VINYLDIENE CHLORIDE, potential carcinogen, mice
12-0029	VINYLDIENE CHLORIDE, potential inhalation carcinogen, rats
10-0009	VINYLDIENE CHLORIDE/ACRYLONITRILE (MODACRYLIC) FIBERS, flame retardant
25-0001	VINYLDIENE CHLORIDE AND OTHER CHEMICALS, toxic effects under study by various chemical companies
16-0113	VINYLDIENE CHLORIDE MONOMER, industry-sponsored tests on to be administered by Manufacturing Chemists Association
13-0001	VINYLDIENE CHLORIDE MONOMER, potential carcinogen, spurs industrial testing
6-0015	VINYLDIENE FLUORIDE POLYMERS, chemically-resistant containers for high-purity chemicals
7-0051	VITAMIN E, antioxidant protector against skin cancer from potential ozone reduction in atmosphere
5-0040	VITAMIN E, life extender for humans under severe environmental pollution
5-0040	VITAMIN E, retarder of aging in human cells
6-0020	VOLATILE HYDROCARBONS, inhalation toxicology
10-0045	WASTE DISPOSAL AT SEA, potential hazards of combustion of organic chlorides
15-0057	WATER, instrumentation and monitoring systems for meeting standards
18-0039	WATER HYACINTHS, may prove source of substitute fuel, animal feed, and fertilizer
18-0039	WATER HYACINTHS, NASA using to remove pollutants from effluents
2-0059	WATER POLLUTION CONTROL, New Jersey
3-0074	WATER QUALITY CONTROL, industrial impact
3-0010	WATER QUALITY CRITERIA, Texas
3-0009	WATER QUALITY STANDARDS, Illinois
17-0050	WELD KILLER, ocean burning decision due
13-0045	WEEKS, possible pollution filtration systems
2-0045	WOOD, carcinogen
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8-0048	WOOD-RELATED OCCUPATIONS, mortality from Hodgkin's disease
3-0002	X-RAY FLUORESCENT ANALYSIS, arsenic
24-0048	XYLENE, potential toxicity to humans causes NIOSH to recommend new health and safety criteria

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22-0039	ZINC, epidemiological survey, Houston, Texas
11-0008	ZINC CHLORIDE, flame retardant effects on wood fires
* 1-0021	ZINC OXIDE, UV stabilizer for polymers
13-0054	ZIRCONIUM, cause of lung disease in monkeys
13-0054	ZIRCONIUM, cause of skin tumors
9-0043	ZIRCONIUM CHLORHYDRATE, lung granulomas
9-0043	ZIRCONIUM CHLORHYDRATE, potential lung damager
9-0043	ZIRCONIUM COMPOUNDS, skin granulomas
13-0053	ZIRCONIUM, labeled health hazard by FDA advisory panel
13-0053	ZIRCONIUM, potential lung carcinogen

11-0016	AARONS, Leary F.	*17-0030	RELISLE, Andre A.
18-0033	ABRAS, K.B.	20-0018	RENNOW, A.W.
* 6-0002	ACKERMAN, Jill	6-0001	RENECO, V.
20-0021	ADAMS, W.G.F.	26-0017	RENNIGT, William F.
6-0019	ADIR, Joseph	*14-0011	RENNETT, Diane E.
24-0030	ADLSTROM, David H.	11-0023	RENE, Paul D.
*19-0008	ADMED, A. Karis	10-0006	RENEVER, Johanna M.
19-0031	ADNTAR, J.J.	* 2-0012	RENEVER, A.
3-0023	ALABIS, Y.	8-0045	RENEY, James W.
7-0053		25-0007	RETTLEY, F. Ray
4-0024	ALBERT, Richard A.	20-0040	REYCHOK, Milton E.
*16-0047	ALABIF, A.	14-0123	RIANCHI, Diana W.
1-0043	ALBRIGHT, Lyla E.	21-0018	RINNA, A.M.S.
6-0022	ALBRE, F.W.	*21-0024	RIELONAI, Rachel
*12-0017		*20-0007	RIERBAUM, Philip J.
*13-0034		23-0018	RIERBAUM, George W.
*13-0033	ALDYREVA, M.D.	* 2-0014	RIGNON, J.
15-0037	ALYKASHIN, R.M.	*16-0033	
22-0001	ALFETI, A.	9-0011	RINGHAM, E.
*13-0016	ALLEN, J.R.	3-0036	RIRKY, W.M.
2-0043	ALLEN, H.	15-0043	
* 6-0002	ALLISON, C. Anthony	18-0030	
10-0016	ALM, Alvin T.	*14-0037	RISCAVE, Pierre E.
9-0051	ALTMULLER, A.P.	5-0034	RITTEL, R.
*21-0024	ALUMOT, Eugenia	24-0006	RJORN, Josefsson
*16-0047	AMACHER, D.E.	24-0039	BLACK, T.W.
25-0038	AMES, Bruce W.	4-0018	BLACK, D.A.
22-0032	AMETER, Robert L.	6-0019	
*25-0009	ANCA, Lee	10-0014	BLANDFORD, A.G.
5-0064	ANDERMAN, Julian B.	9-0023	BLAU, Gary E.
20-0055	ANDERSON, Earl V.	* 5-0007	BLIETZ, Hector F.
20-0055	ANDERSON, J.W.	24-0002	BLOT, William J.
5-0050	ANTONYUZHKO, V.A.	8-0022	BLUMENCRANTZ, Michael J.
26-0012	ANZUINO, J.	17-0039	BLUMER, M.
26-0013		3-0042	BODNER, Arnold H.
*15-0027	ARCHER, Victor E.	16-0095	BOGER, Eliahu
11-0019	ARCHER, Wesley L.	* 6-0005	BOGOVERI, P.
5-0010	ARCOS, Joseph C.	10-0039	BOLANDER, Karen
5-0010	ARCUS, MARY F.	24-0032	BOLT, W.M.
* 5-0007	ARLOW, Robert	24-0032	BOLT, W.
5-0033	ARMERHUYSTEN, Frank	*16-0055	BOLTON, R.E.
5-0021	ASCHENHASE, Lee J.	* 2-0014	BONNAUD, G.
2-0032	AUBERT, M.	*12-0019	BOOTH, Gary W.
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1-0019	AUBENBACH, Stanley I.	18-0025	
23-0017	AUSTERN, Barry W.	20-0036	
* 2-0035	AUTIAN, J.	* 3-0051	BOOTH, K.S.
* 3-0053		3-0027	BORGSMAN, A.R.
* 9-0035		19-0003	BORGSTEDT, Harold H.
26-0018		10-0014	BOTHNER, Michael
9-0054	AVERY, Michael J.	* 9-0009	BOURKE, M.P.
3-0026	AVIADO, D.M.	*16-0024	BOWES, D.R.
15-0060	AXTMANN, Robert C.	21-0014	
7-0020	AZAR, A.	3-0030	BOWLUS, Stephen
15-0017	BABISH, J.G.	5-0021	BOWMAN, Robert E.
3-0021	BACK, Kenneth C.	*21-0004	
14-0051	BADR, F.M.	*11-0004	BOYER, Kenneth W.
14-0051	BADR, Ragaa S.	9-0023	BRADY, F.E.
5-0057	BAGLAN, R.J.	5-0004	BRANTON, Dean R.
20-0015	BAIRD, Rodger B.	*15-0025	BRASH, Heins E.
4-0012	BAKER, A.	22-0033	BRESAN, D.J.
15-0043	BALDWIN, R.C.	10-0020	BRIDGEB, Kenneth
12-0024	BALTOG, I.	5-0031	BRIDGES, J.W.
26-0014	BANCROFT, Keith	5-0057	BRIGGS, Dale E.
16-0105	BARBIN, A.	2-0044	BRILL, A.B.
3-0029	BARNES, J.R.	4-0047	BRINSON, P.
2-0022	BARRATT, R.S.	20-0047	BRISTON, John H.
3-0025	BARRON, C.	26-0036	BRODMAN, George L.
21-0026	BARTHEL, William F.	14-0050	BROCKNER, Wallace S.
5-0016	BARTINGER, William F.	3-0011	BROOKER, M.P.
26-0025	BARTSCH, E.	25-0012	BROOKSBANK, P.
16-0105	BARTSCH, Helmut	6-0032	BROSIER, J.S.
24-0033		*16-0044	BROTMAN, Martin
4-0024	RASTROW, Robert D.	24-0042	BROWN, Arnold
7-0033	BATTLE Memorial Institute	14-0039	BROWN, Martin
1-0016	BATTIGELLY, Marie C.	22-0033	BROWN, Royal A.
16-0103	BAUER, Marjorie	22-0040	BRUBAKER, Paul E.
25-0022	BAZIN, W.J.	*16-0034	
17-0055	BEATTIE, A.D.	*13-0019	BRUCH, J.
10-0004	BEAUDOIN, ALLAN R.	3-0005	BRUNS, L.E.
20-0016		1-0047	BRUCE, F.
* 6-0004	BECK, E.G.	1-0047	BUCHHEA, A.
16-0100	BECKER, J.W.	24-0032	BUCHHEA, Deytro
* 6-0009	BEIL, Karen	10-0003	BUCHTER, A.
2-0002	BEITZ, Lieselotte	7-0017	BUCK, W.B.
2-0022	BELCHER, E.	15-0056	BUDE, William L.
3-0026	BELF, M.	7-0031	BUVIDAS, L.J.

23-0011	BUNCH, John E.	21-0036	CLINE, Richard E.
23-0012		18-0040	COATE, William B.
12-0025	BURNEY, I.	8-0022	COWEN, Jack W.
15-0013	BURTON, C.A.	17-0058	COWISPOI, L.A.
15-0014		23-0017	COWEN, Jesse M.
10-0037	BURCHARD, John K.	* 9-0026	COWEN, Saul G.
3-0046	BURKE, Donald P.	18-0002	COLLINS, George L.
11-0022	BURNETT, Ronald D.	24-0039	COLLINS, T.F.X.
1-0046	BURNS, Bruce E.	1-0046	COLTON, John B.
4-0026	BURNS, James E.	3-0049	COWLEY, Walt
16-0086		3-0001	COWOLLY, Rory B.
*16-0062	BURRELL, Robert	*18-0015	
23-0013	BURSE, Virilyn W.	5-0027	CONSOLIDATION COAL CO.
*18-0014	BURTON, J.L.	* 3-0018	COOK, Philip M.
* 8-0027	BUSCHER, J.M.	25-0034	COOK, R.R.
* 8-0028		25-0032	COWFER, R.G.
8-0016	BUSLAND, David A.	17-0002	COOKE, A.S.
3-0042	BUTLER, George J.	13-0003	COOKSON, J.B.
23-0019	BUTLER, James W.	10-0009	COOPER, A.S.
* 6-0002	BUTTERFIELD, Ann	10-0040	COOPER, P.
* 5-0040	BUTTON, Lawrence H.	20-0016	CORSETT, T.H.
6-0041	CAINI, R.J.	18-0029	CORWELL, John W.
20-0041	CAGLE, G.W.	20-0016	CORWELL, R.G.
17-0011	CALAMARI, T.A.	8-0025	CORNIER, R.F.
* 7-0038	CALANDRA, J.C.	9-0029	CORNIUS, B.
15-0046	CALLEMAN, C.J.	5-0001	CORRIDAN, John P.
7-0003	CAMPBAY, R.S.	24-0045	COTTIS, S.G.
22-0020	CAMISA, Alfred G.	2-0043	COURT, D.
22-0035	CAMPBELL, K.	4-0022	
9-0044	CAMPBELL, T.	4-0025	COUSINS, Michael J.
2-0030	CANTON, M.	16-0087	COWEN, D.M.
15-0031	CAPPIELLO, Vincent	14-0044	COX, Geraldine V.
15-0032		20-0043	CRAIG, Robert B.
2-0050	CAPURRO, P.U.	*20-0027	COX, R.A.
* 3-0013	CARIDES, J.N.	13-0044	CREECH, J.L.
11-0026	CARLSON, Jack W.	19-0003	CRECHLIUS, Eric
*15-0010	CARLSON, Karen T.	*16-0084	CROWWELL, Thomas H.
14-0042	CARPENTER, Ben H.	10-0047	CROSS, Frank L.
23-0011		1-0013	CROSSLAND, Janice
23-0012		25-0012	CRUMMETT, W.B.
25-0043	CARPENTER, C.P.	3-0067	CULIN, F.
* 2-0012	CARPENTER, L.	20-0018	CULLIS, C.F.
19-0003	CARPENTER, Roy	*13-0009	CUNNINGHAM, H.M.
6-0037	CARTER, Coleman D.	17-0060	CUPP, James
21-0026		*20-0007	CURTIS, Robert
* 8-0006	CARTER, L.J.	1-0020	DAETZ, Douglas
* 8-0007		9-0001	DAHM, Douglas B.
8-0045		*11-0005	DALQUEN, P.
8-0018	CARTER, Vernon L.	5-0042	DALY, J.W.
16-0003	CASE, A.A.	20-0059	DANIEL, G.A.
15-0015	CASTILLO, M.	16-0075	DARLEY, E.F.
*15-0024	CATSIKIS, B.D.	7-0057	DARMEN, Kenneth I.
16-0117	CAVALLERI, Alessandro	14-0044	DAVAVIN, I.A.
7-0003	CAWSE, P.A.	5-0057	DAVIES, J.
9-0044	CELIN, T.	* 6-0002	DAVIES, Philip
14-0022	CHAN, P.K.	12-0035	DAVIS, Douglas D.
*13-0017	CHANG, L.W.	22-0018	DAVIS, John C.
*15-0023		*16-0055	DAVIS, J.N.G.
14-0037	CHANG, R.F.	17-0028	DAVIS, Richard C.
18-0031	CHANG, Yeong-Jen Peter	9-0004	DAVISON, Richard L.
17-0001	CHARTOONI, M.E. Jr.	5-0041	DePAZIO, C.A.
3-0003	CHARBOWNEAU, S.M.	24-0017	DEJOWCKEHEHE, W.
*15-0026	CHARLESWORTH, F.A.	2-0033	DEL BONGHI, M.
13-0047	CHAD, Y.K.	1-0003	DENG, C.S.
*13-0013	CHEMICAL SPECLS. NGRS. ASSN.	*16-0073	DAUGHTREY, E.H.
1-0003	CHEN, H.C.	10-0042	DELFINO, Joseph J.
*19-0013	CHESICK, John P.	*20-0027	DENWENT, R.G.
4-0053	CHEN, Teiehwa J.	* 2-0013	DESBOURDES, J.
8-0014	CHIOU, W.L.	*16-0031	
*19-0016	CHISHOLM, Morag	11-0022	DIAMOND, Philip
*18-0017	CHOT, C.L.	14-0011	DI CARLO, John P.
22-0001	CHU, S.Y.	*13-0020	DICKSON, Larry G.
20-0051	CHUNG, S.A.	20-0052	DIETER, Jerry A.
*22-0004	CHUNG, A.M.	* 3-0017	DIFFENDING, J.E.
*16-0040	CHUNG, Jacob	4-0018	DILLEY, James V.
2-0043	CHRISMAN, C.	15-0043	DINGER, S.G.
*16-0040	CHVAPIL, Miles	*16-0072	DINGER, Carolyn Y.
4-0019	CICERONE, Ralph J.	*10-0011	DIPAGLO, Theresa
*19-0011		7-0057	DIPASQUALE, Louis C.
2-0051	CICOLELLA, A.	18-0029	DISALVO, Anthony L.
8-0001	CIGRY, M.	15-0039	DISALVO, Louis H.
3-0025	CIVIC, T.	*20-0028	DIXON, Dale D.
*16-0080	CLAKE, R.A.	23-0017	DODDS, Richard A.
4-0039	CLARK, Albert C.	15-0040	DOIG, Marion T.
7-0055	CLARK, Robert C. Jr.	*16-0084	DOLAN, William M.
10-0039	CLAUS, G.	*16-0080	DOLLEY, C.Y.
16-0074	CLAYTON, Wesley J. Jr.	16-0123	DONALDSON, Catherine H.
5-0038	CLEASBY, J.L.	*25-0008	DOWLACH, I.
1-0019	CLESCERT, Nicholas L.	2-0032	DOWHIE, R.
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*24-0015 DOMENEZ, Janet
 16-0003 DOWN, C.R.
 *16-0039 DOUGLAS, Steven D.
 3-0047 DOWN, Morgan D.
 *16-0080 DRAFTMAN, G.H.
 13-0029 DRAKE, J.J.
 14-0045 DRAKE, John W.
 *14-0013 DREW, Robert T.
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 9-0045 DRIVAS, Peter J.
 *13-0016 DUDLEY, A. Mary
 *13-0016 DUDLEY, A.W.
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 *20-0023 DUKERT, Andrew A.
 10-0003 DUNCAN, J.R.
 * 2-0011 DUNCAN, Linda J.
 24-0023 DUNSTAN, William M.
 22-0031 DUVATMAN, Alan
 1-0001 DYEREN, Berni I.
 13-0048 DYCKMAN, Edward J.
 5-0037 DYER, W.
 15-0016 DYERSEN, D.W.
 *19-0014 EADE, O.E.
 17-0029 EARNHART, H.W.
 *16-0082 ECKANOW, B.
 *15-0011 ECKARDT, Robert E.
 *19-0014 EDWARDS, J.C.
 14-0030 EDWARDS, R.W.
 *16-0079 EGER, E.I., II
 *16-0084
 *20-0027 EGGLETON, A.E.J.
 13-0044 EKKENBERG, Lars
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 23-0012 EHRMANTRAUT, J.W.
 *19-0009 EIGNER, Joseph
 7-0017 EICHELBERGER, James W.
 *16-0030 EICHEN, Erwin
 3-0056 EIMMORN, I.F.
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 5-0012 EISENBERG, B.J.
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 *16-0040 EISENBERG, William V.
 20-0045 EKDAHL, Carl A.
 * 2-0009 EL-DEEN, Shams
 26-0011 ELKORT, Richard J.
 * 2-0009 EL-SWEFFY, A.Z.
 *15-0027 ELLISON, Carl
 *18-0028 ENGELHARDT, G.
 *18-0014 ENSILL, P.J.
 16-0116 ENTENLINE, Philip E.
 3-0004 ENVIRONMENTAL POLLUTION AGENCY
 * 3-0014
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 *20-0006 ETTINGER, Harry J.
 13-0028 EVANS, Dale E.
 *13-0020 EVANS, Delbert E.
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 *16-0039 EVERETT, Gordon
 17-0048 FAGGAN, Joseph E.
 *20-0006 FAIRCHILD, Charles I.
 6-0037 FALK, Henry
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 10-0023 FALLOWELL, William F.
 * 7-0038 FANCHER, Otis E.
 4-0012 FARNER, T.M.
 *14-0008 FARKAS, Edward J.
 26-0003 FASSBENDER, H.W.
 2-0046 FECK, J.
 *24-0011 FEDERAL Task Force on INOS
 3-0018 FEVES, Wilson A.
 2-0033 FERRAILOLO, G.
 9-0030 FERRETTI, Emmett J.
 1-0019 FERRIS, James J.
 17-0017 FIELDS, Ellis K.
 17-0018 FIELDS, Minerva
 5-0030 FILATOVA, V.S.
 4-0027 FINE, Lawrence J.
 4-0056 FINE, L.W.
 22-0036 FINKLEA, John F.
 17-0055 FINLAYSON, Margaret J.W.
 7-0055 FINLEY, John S.
 7-0031 FINNERAN, J.A.
 *13-0034 FISKEIN, L.
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36-0037 FISHER, Nicholas S.
 3-0063 FLINN, James E.
 4-0004 STATE of Florida
 * 9-0007 FLOWERS, Earl S.
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 * 2-0013 FORDINARE, A.
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 *20-0008 FONTAINE, Jack H.
 19-0027 FOMNEY, A.J.
 3-0057 FOMSTER, H.V.
 23-0023 FOSTER, P.
 23-0003 FORDYCE, J.
 23-0002 FENNELLY, Paul F.
 9-0005 FOWLER, Bruce A.
 *19-0017 FOX, Elizabeth J.
 *19-0017 FOX, J.W.
 25-0042 FRAUENI, Joseph F. Jr.
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 5-0011 FREEKLAND, G.
 13-0006 FREEDMAN, Harry C.
 11-0002 FREISER, H.
 22-0037 FRENCH, Jean C.
 20-0056 FREUND, Samuel M.
 7-0036 FRIEDMAN, Sharon M.
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 *16-0045 FRIEDRICH, K.H.
 17-0045 FRIES, George F.
 20-0052 FRISCH, Kurt C.
 3-0020 FRISTON, Robert M.
 *18-0016 FRITZ, I.J.
 26-0012 FRIZ, Pele L.
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 3-0025 FROMLIGER, J.
 9-0029 FROMING, C.D.
 18-0043 FROMI, J.R.
 2-0017 FUERST, Robert
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 9-0033 FUHRMANN, Tom W.
 * 9-0006 FUKUTO, Roy T.
 3-0010 FULCHER, Gordon
 3-0050 FULKERSON, W.
 2-0033 FUMAROLA, G.
 15-0044 FUNES-CRAVIOTO, Francisco
 3-0025 FUNT, J.
 *25-0009 GABOR, Silvia
 12-0002 GAILRACH, Stephan H.
 *11-0009 GAILLEY, Phil
 *23-0027 GANGOLLI, S.D.
 2-0033 GARDI, R.
 2-0043 GARDIER, R.W.
 *19-0014 GARDNER, M.J.
 26-0005 GARNER, Fradley
 *14-0055 GARRETT, J.
 2-0018 GARRETT, Shirley
 19-0027 GASTON, S.J.
 17-0054 GAUDY, A.F., Jr.
 *22-0003 GEEKE, Charles W.
 25-0043 GEARY, D.L. Jr.
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 3-0019 GENRING, P.J.
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 25-0004 GELMAN, C.
 2-0043 GENANSIA, M.F.
 *23-0004 GIBBS, G.W.
 7-0055 GIBSON, Gary G.
 16-0002 GIBNEY, Ling-yea
 16-0097 GIESE, Ronald L.
 * 3-0052 GILBERG, B.O.
 *16-0083 GILLIES, Charles W.
 3-0071 GILLETTE, Robert
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 * 6-0005 GILSON, J.C.
 * 3-0018 GLASS, Gary E.
 17-0055 GOLDBERG, A.
 *14-0038 GOLDBERG, E.D.
 3-0022 GOLDBERG, L.
 *11-0004 GOLDFIELD, Joseph
 15-0015 GOLDMAN, E.
 5-0026 GOLDSCHMIDT, B.W.
 * 2-0006 GOLDSSTEIN, B.
 4-0026 GOMES, Edward B.
 *15-0027 GOOD, William O.
 11-0013 GOODBRIDGE, Edward R.

7-0025	GOODSON, Ray	8-0037	HAYAKAWA, Reinosuke
*19-0012	GORDON, Gerald A.	19-0027	HAYNES, W.F.
7-0002	GORDON, Harold L.	6-0037	HEATH, Clark W. Jr.
2-0004	GORDUS, Adon A.	6-0047	HECHT, Stephen B.
*20-0014	GORSKI, C.W.	23-0033	HEPNER, R.E., Jr.
24-0003	GOSTINE, Thomas A.	15-0056	HELLER, Stephen R.
15-0046	GOTHE, R.	7-0016	HELLMAN, Thomas M.
24-0038	GOTTSCH, Anne-Lise	* 2-0014	HEM, S.
3-0011	GOULDEN, P.D.	*16-0033	
2-0051	GRADISKI, D.	16-0116	HENDERSON, Vivian
5-0011	GRAEME, M.	13-0025	HENNING, R.F.
17-0055	GRAHAM, J.	*16-0061	HEPPLESTON, A.C.
22-0027	GRAHN, Oile	5-0061	HESKINS, Michael
8-0034	GRAINGER, Leslie	*25-0014	HETTER, Norman E.
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4-0056	GRAYSON, V.S.	20-0029	HENINS, Maurice A.H.
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*23-0027	GRASSO, P.	23-0001	HIGGINS, F.S. Jr.
3-0037	GREEN, Richard S.	20-0035	HIGGINS, Robert
*13-0020	GREENBAUM, Leon J.	3-0056	HILMAN, F.D.
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* 3-0031	GREGG S.	2-0047	HIRSHHORN, K.
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* 1-0009	GROSS, Paul	9-0011	HOEGG, U.
* 6-0008		6-0047	HOFFMAN, Dietrich
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1-0045	GROSS, S.	6-0020	HOGAN, J.K.
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*20-0049	GROVES, John T.	25-0031	
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*11-0005	HAIN, E.	16-0095	HOMBURGER, Freidy
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20-0045	HALL, Charles A.S.	*25-0010	HORVITZ, J.S.
*18-0014	HALL, K.A.	5-0011	HOSKINSOW, Ronald W.
22-0035	HALL, L.	1-0003	HOW, S.W.
*16-0084	HALSEY, Michael J.	*25-0013	HOWARD, Philip H.
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*23-0013	HANCHETT, Arnold	2-0034	HRUDY, S.E.
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*12-0019	HANSEN, Dale J.	26-0029	
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*16-0058	HARINGTON, J.S.	3-0044	HUMPHREYS, R.D.
*18-0007	HARLEY, Russell A.	25-0312	HUMISTON, C.G.
23-0023	HARMON, D.G.	26-0016	HUNG, G.W.C.
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*18-0013		*16-0027	KONBERT, J.H.
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20-0029	JOHNSON, D.F.	5-0031	LADY, Edward R.
22-0039	JOHNSON, F.A.	8-0005	LAFLUR, P.D.
18-0034	JOHNSON, M.W.	*15-0024	LACOW, R.J.
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4-0052	JOHNSTON, John B.	*21-0004	LAITINEN, Herbert A.
15-0006	JONES, Adelaide E.	*25-0027	LAKE, B.G.
*20-0049	JUNK, Gregor A.	15-0044	LAMBERT, Bo
9-0054	KAHN, Raymond H.	*15-0025	LAMONTAGNE, R.A.
*20-0049	KAISER, Klaus L.E.	12-0002	LAMRIGAN, Philip
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22-0034	LEROY, Andre F.	*25-0028	MATHUR, S.P.
*16-0082	LEVINSOW, R.S.	6-0016	MAUGH, Thomas H. II
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17-0039	LEWIS, A.L.	5-0011	MAYFIELD, Robert J.
19-0026	LEWIS, E.	18-0042	MAZUNDAR, Satl
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*19-0014	LLOYD, Barbara	13-0031	MICHAEL, William R.
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* 7-0038	LYMAN, Frank L.	*16-0084	MILLER, Ronald D.
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*13-0014	McCARTHY, Raymond L.	11-0012	MINDHEIM, W.J.
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*16-0017	McCOWE, Walter C.	26-0015	MIYAZAKI, S.
* 6-0010	McCULLAGE, S.F.	8-0016	MOHAMMED, Ishaq
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* 3-0051	McDONALD, T.	*19-0014	MOLES, T.M.
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*14-0014	McELROY, Michael B.	* 2-0014	MONCHAUX, G.
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*14-0029	MACE, K.J.	22-0028	MOORE, John W.
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17-0055	MACKIE, E.	16-0099	MOORE, Peter D.
*16-0018	MACKLER, Anne D.	22-0035	MOORE, W.
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*15-0034	MAGEE, P.W.	9-0036	MORAN, Gregory P.
*16-0019	MAGGIORE, Carl	22-0036	MORAN, John
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*16-1042		* 2-0007	MORGAN, A.
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* 5-0009	MARVINNEY, Sandy	3-0021	MURPHY, James P.F.
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* 8-0027	NELSEN, S.F.	*18-0027	PFUDERER, Francis A.A.
* 8-0028		*18-0027	PFUDERER, Peter
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2-0025	NENOV, Peter Z.	15-0053	PHILLIPS, Roger W.
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*16-0011	NEWMHOUSE, Maribel L.	19-0025	PHINNEY, J.A.
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*16-0035	NICHOLSON, William J.	7-0003	PIERSON, D.N.
*15-0041	NIELSEN, Paul L.	20-0042	PIERSON, Duane L.
20-0036	NIELSON, Arthur	9-0001	PILLIE, Roland J.
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* 9-0026	OJAMPERA, Saima	*16-0028	
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*20-0006	ORTIZ, Lawrence W.	26-0010	POZHARISSEKI, K.M.
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7-0002	OTT, Marvin Gerald	22-0039	PREVOST, R.J.
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3-0038		21-0020	QUINN, H.J.
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21-0013	PARLISER, R.	18-0034	RADON, J.C.
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*16-0009	PARKES, Raymond W.	10-0003	RAMIREY, F.K.
* 9-0026	PARGOLA, Abraham	10-0032	RANUG, U.
16-0088	PASTERNAK, Alan	14-0036	RAVEY, M. (Rogozinski)
7-0051	PASSWATER, Richard A.	* 9-0025	RAWLS, Rebecca L.
19-0029	PATEL, J.G.	17-0025	RAYMOND, Raphael
4-0053	PATTERSON, C.C.	* 9-0024	REDDY, Sandaru S.
5-0026	PAUL, J.E.	*15-0035	
9-0036	PAULSON, Donald R.	18-0042	REDMOND, Carol
8-0032	PANDYS, Stephen	5-0062	REGULSKI, Thomas W.
20-0051	PEARSON, C.J.		

* 7-0013 REEVES, Andrew
17-0011 REEVES, W.A.
*17-0030 REICHEL, William L.
5-0063 REIMERS, Robert S.
26-0001 REIMSCHUESSEL, H.K.
*21-0005 REIST, Parker C.
26-0043 RESNIKOFF, Marvin
12-0023 REYNOLDS, Edward S.
26-0026
17-0021 REYNOLDS, W.W.
19-0031 REZNIK, A.A.
11-0020 REZNIK, Gerd
11-0020 REZNIK-SCHULLER, Hildergard
13-0028 RICE, Stanley D.
8-0047 RICCI, Larry J.
10-0028
21-0022
13-0018 RICHARDSON, Byron L.
3-0020 RICHTER, W.A.
8-0012
*16-0051 RICKERT, Robert R.
11-0012 RIPPER, S.M.
3-0055 ROBSON, John H.
* 3-0051 ROBB, C.A.
11-0021 ROBBINS, W. Paul
6-0028 ROBERTS, Alan
8-0013 ROBERTS, Earl J.
20-0003 ROCHOVICH, Sue Ellen
20-0051 ROGERS, T.H.
*16-0020 ROHL, Arthur H.
*16-0025
* 8-0029 ROJAS, Mario G.
* 7-0040 ROLL, David B.
5-0036 ROMEO, N.
18-0043 ROMA, D.C.
25-0012 ROSE, J.Q.
*16-0023 ROSE, Malcolm
8-0023 ROSENBERG, P.H.
22-0041 ROSENBERG, Rutger
23-0027
18-0003 ROSENBLATT, Gerd M.
26-0012 ROSSI, O.
26-0013
*16-0010 ROSSITER, Charles E.
5-0017 ROTH, Philip B.
8-0022 ROWE, Peter H.
21-0015 ROWE, Gilbert T.
*18-0019 ROWLAND, F.S.
8-0013 ROWLAND, Stanley P.
14-0019 RUBIN, Edward S.
*16-0019 RUBIN, Ivan B.
* 2-0036 RUBIN, R.J.
15-0013
15-0014
7-0019 RUBINSTEIN, Harry
20-0043 RUDD, Robert L.
21-0033 RUMION, Howard E.
16-0095 RUSSFIELD, Agnes B.
17-0006 RUZO, Luis Octavio
3-0056 RYAN, P.W.
18-0030
5-0041 RYBY, C.B.
8-0023 SAARNIVAARA, L.
10-0024 SAGAMA, K.
2-0041 SAIDA, K.
14-0037 SALOVEY, R.
19-0028 SALVADOR, L.A.
5-0054 SALVIN, Victor S.
*18-0015 SAMARA, G.A.
23-0015 SAMBORN, James R.
16-0075 SAMBERG, D.V.
3-0005 SANDI, E.
*10-0011 SANDORFF, C.
*12-0008 SASUGA, Tsuneo
7-0001 SATO, Minoru
25-0022 SAUNDERS, P.T.
23-0018 SAURO, Moreland F.
20-0048 SAXTON, James C.
20-0050 SAXON, Robert
13-0007 SCARBOROUGH, Gene A.
5-0057 SCHAFFNER, W.
20-0035 SCHEEL, Lester D.
23-0025 SCHELL, W.R.
6-0041 SCHLAUCH, W.F.
*16-0014 SCHMIDT, A.M.
20-0041 SCHMIDT, C.R.
25-0030 SCHMIDT-COLLERUS, J.J.
*16-0056 SCHMITZER, R.J.
5-0038 SCHOW, E.A.
*16-0064 SCHNEIDERMAN, Marvin A.
21-0031 SCHOFIELD, G.B.
13-0027 SCHOFIELD, William R.
17-0011 SCHREIBER, S.F.
10-0036 SCHUETTE, William L.
5-0057 SCHULENT, A.
* 2-0036 SCHULZ, C.O.
9-0033 SCHULZ, Ken R.
* 9-0034 SCHULZE, James
9-0003 SCHUTH, Carter K.
*12-0019
17-0026
12-0034 SCHWARTZ, Herbert
23-0001 SCHWARTZ, W.A.
17-0025 SCHWEIGHARDT, Frank K.
8-0025 SCHWETZ, S.A.
25-0012
25-0026
19-0023 SCOTTI, L.J.
23-0023 SEARLE, C.E.
* 2-0014 SEBASTIEN, P.
*16-0033
2-0059 SECESSER, Ernest R.
*12-0009 SEGUCHI, Tadao
5-0026 SEIDMAN, I.
16-0003 SELBY, L.A.
11-0025 SELIKOFF, Irving J.
*16-0008
*16-0063
22-0031
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14-0017
21-0017
18-0041
* 6-0004 SESSA, William
4-0053 SETHI, S.
*16-0041 SETTLE, D.
22-0019 SEVERINGHAUS, John W.
* 2-0009 SEYFRIED, Thomas W.
5-0041 SHAHEEN, H.
9-0045 SHAHIDI, J.K.
*16-0084 SHAIR, Fredrick W.
3-0043 SHAKESPEARE, Thomas F.
26-0010 SHAMA, S.K.
12-0020 SHAPOSHNIKOV, J.D.
7-0056 SHARRY, John A.
25-0003 SHEA, Kevin P.
13-0047 SHELTON, Dean W.
23-0024 SHELTON, Arthur W.
3-0029 SHERMAN, Fred
16-0074 SHERMAN, H.
17-0026 SHERMAN, Patricia
5-0067 SHOLTS, Phyllis A.
14-0036 SHORR, L.W.
3-0050 SHULTZ, W.D.
26-0015 SIKKA, H.C.
3-0028 SILBER, D.
2-0037 SILVERMAN, A.P.
20-0030 SILVESTER, Raymond
*16-0078 SIMPSON, B.R.
10-0046 SINGER, Philip C., Ed.
* 2-0035 SINGH, A.R.
* 3-0053
20-0050
26-0018
9-0037
* 1-0014 SIROYER, Michael A.
13-0059 SJOEGREN, H.O.
18-0038 SKOGERBOE, Rodney K.
*19-0015 SLINNEY, David
7-0016 SMITH, Crampton A.
* 2-0012 SMALL, Francis H.
* 6-0011 SMITH, G.
6-0029 SMITH, Peter J.
15-0038 SMITH, Thor L.
*16-0069 SMITH, William H.
16-0089 SMITHER, W.J.
* 6-0003 SMIL, Vaclav
* 7-0013 SMITH, D.J.
* 9-0014 SMITH, Ralph G.
6-0020 SNEEL, Fred M.
17-0060 SNEELINGS, W.M.
5-0064 SNIPES, Wallace
18-0042 SNOODGRASS, John E.
21-0011 SOLLECITO, William
*16-0009 SCUMABEND, L.F.
8-0040 SCUTAR, C.A.
*17-0030 SOUTHWICK, Charles A.
19-0041 SPANW, James W.
SPEAR, Robert C.

*16-0034	SPELL, Sidney	6-0022	THOMAS, R.
*17-0013	SPEIZER, Frank E.	*13-0034	
8-0009	SPIELHOLTZ, Gerald I.	2-0021	THOMPSON, Emanuel B.
3-0005	SPENCER, K.	2-0022	THOMPSON, J.W.
20-0031	SPLONOW, Richard A.	* 6-0003	TIMBRELL, V.
*16-0082	STANASEK, V.F.	3-0049	TIPTON, Alan R.
2-0046	STANECKY, O.	25-0012	TIRRELL, J.B.
22-0035	STARA, J.	5-0056	TODD, A.S.
14-0002	STARR, Homer G.	18-0002	THOMAS, Norman W.
* 1-0014	STEELE, G., Jr.	6-0050	THUMM, Byron A.
5-0037	STEELE, John H.	22-0037	TILLEY, J.E.
7-0027	STELLMAN, Jeanne M.	17-0029	TODD, A.S.
26-0009		7-0004	TOLLEY, J.A.
*16-0079	STEFFY, E.F.	2-0024	TOMATIS, L.
5-0013	ST. MARD, Hubert H.	24-0033	
10-0009		8-0009	TORALBALLA, Gloria C.
* 2-0012	STANLEY, R.	3-0020	TORKELSON, T.R.
13-0005	STENDER, John	8-0012	
* 7-0034	STENSEY, Per	*20-0006	TOSINE, H.M.
8-0045	ST. JOHN, Philip A.	21-0011	TOU, James C.
2-0022	STEPHEN, W.I.	*20-0008	TRAYER, David H.
*22-0014	STEPHENS, Edgar R.	5-0041	TREBELLAS, J.C.
17-0025	STERNBERG, Meina W.	7-0020	TROCHIMOWICZ, W.J.
22-0038	STERNETT, Janice E.	*19-0015	TROWEL, Joan
*20-0014	STETTLER, L.R.	14-0046	TSIMBAL, I.M.
24-0017	STERNUT, W.	* 3-0018	TUCKER, James H.
*16-0084	STEVENS, Wendell C.	16-0118	TULLAR, Irving V.
7-0030	STRELEZOFF, Samuel	4-0052	TUNK, Amos
*16-0048	STEWART, Harold L.	22-0035	TURNER, D.B.
17-0055	STEWART, G.T.	3-0037	TURNER, John C.
22-0038	STEWART, Peggy L.	26-0018	TURNER, J.E.
1-0027	STEWART, Richard D.	*26-0009	TURNER-WARNICK, Margaret
3-0057		17-0057	TURNER, William F.
3-0058		9-0047	UEHLEKE, H.
3-0059		15-0016	UPPSTROM, L.R.
2-0015	STICH, N.F.	15-0006	UTHER, John F.
8-0016	STOKELING, Robert K.	14-0032	UTIDJIAN, H.
15-0017	STOKESAND, C.S.	* 2-0006	VAN AS, A.
4-0019	STOLARSKI, Richard S.	22-0001	VANDEGRIFT, A.E.
*19-0011		3-0043	VANDERVORT, R.
9-0044	STOLOFF, Leonard	4-0040	
2-0015	STOLTZ, D.R.	9-0038	
2-0025	STOWARD, Michael D.	16-0095	VAN DONGEN, Cornelis G.
8-0024		5-0026	VAN DUUREN, B.L.
5-0030	STURCH, M.H.	21-0019	VAN ESCH, G.J.
8-0041	STRICKMAN, Samuel W.	3-0050	VAN HOOK, R.I.
16-0004	STRONG, Terrence	10-0006	VAN LOGTEN, N.J.
*16-0078	STRUNIN, L.	21-0019	
3-0029	STULA, E.F.	3-0021	VAN STEE, Ethard W.
16-0074		* 3-0039	VARGA, G.M. Jr.
*14-0029	STURN, R.M.	3-0031	VECCIO, Martino
16-0118	SUFFET, Irvin, H.	5-0065	VENITT, S.
* 7-0041	SUGAMARA, Naoki	23-0023	
25-0043	SULLIVAN, L.J.	9-0054	VICK, Ray D.
2-0001	SULLIVAN, Richard J.	3-0033	VILLENEUVE, D.C.
18-0042	SUSSMAN, Nancy	3-0035	
7-0001	SUZUKI, Akio	3-0036	
*16-0053	SUZUKI, Yasunosuke	20-0033	
9-0054	SYEC, Harry J.	20-0034	
6-0020	SWANN, H.E. Jr.	23-0013	VILLANUEVA, Ellen C.
22-0044	SWARTZ, Joel	*19-0017	VILLANUEVA, Raymond
20-0056	SWEGER, Daniel H.	*16-0047	VOLCKHEIMER, Gerhard
*25-0008	SWETTENHAM, K.V.	5-0041	VONA, J.A.
5-0014	SWIHART, Terence J.	3-0056	VOORHEES, K.J.
*15-0025	SWINERTON, J.W.	15-0043	
* 7-0040	SWINARD, Edward A.	18-0030	
16-0101	SZYBALKSI, Elizabeth H.	18-0038	VORPAHL, Kenneth
23-0024	TABER, H.	2-0047	VORSENGER, Gary
*12-0008	TAKENISA, Masaaki	*15-0035	VUKUSICH, D.
*12-0009		10-0032	WACHTMAISTER, C.A.
*12-0009	TAKESHI, Suva	15-0046	
26-0027	TALLEY, Fred A.	8-0037	WADA, Yasaku
1-0004	TAM, Kai C.	*16-0010	WAGGENSPACK, Carmel
10-0014	TANSEY, A.R.	* 6-0000	WAGNER, J.C.
15-0015	TACHIMINA, S.	6-0037	WAGONER, Joseph K.
11-0002	TAKUMOTO, T.	16-0003	WAGSTAFF, B.J.
*25-0014	TAYLOR, Clifton O.	13-0031	WAKIN, Jubran M.
*14-0013	TAYLOR, George J.	8-0046	WALDBOTT, George L.
*25-0015		8-0001	WALLACE, John R.
*25-0017		9-0004	
* 2-0013	TAYOT, J.	*18-0028	WALLNOFFER, P.R.
5-0031	TEK, Rasin M.	*20-0026	WALTERS, A.R.
*16-0008	TEIRSTEIN, Alvin S.	4-0019	WALTERS, Stacy
* 9-0014	TENKIN, Richard L.	*19-0011	
7-0020	TERRILL, J.B.	*16-0078	WALTON, B.
18-0033	THAME, W.G.	10-0044	WARD, P.S.
21-0010	THIESS, A.M.	*22-0004	WARNOCK, M.L.
11-0025	THOMAS, LOUIS B.	20-0046	WARREN, Craig B.
*20-0025	THOMAS, Y. Darrah	5-0019	WARREN, D.R.

24-0029	WARREN, Helen	7-0001	YAMAMURA, Kotaro
26-0045	WARTENBERG, Daniel E.	25-0038	YAMASAKI, Edith
22-0040	WASHINGTON, Mildred E.	7-0019	YAMKOVICH, Alexandra H.
25-0033	WATANABE, P.G.	22-0005	YASHIN, S.
14-0036	WATERMAN, J.A.	19-0031	YAVORSKY, P.M.
11-0014	WATERMAN, W.W.	* 8-0029	YAWS, Carl L.
* 9-0014	WEARE, Bryan C.	1-0003	YEN SHU CHEN, H.C.
5-0048	WEAVER, Paul H.	22-0038	YONKUN, Anna M.
24-0075	WEBER, Frank E.	*18-0018	YOUNG, C.L.
* 2-0006	WEBSTER, I.	25-0024	YOUNG, James S.
*16-0043		17-0059	YOUNGBLOOD, W.W.
4-0027	WECMAN, David H.	17-0027	YU, Ching-Chieh
*17-0013		18-0025	
2-0002	WEICHERT, Norbert	23-0015	
5-0012	WEIL, F.D.	17-0006	ZABIK, Mathew J.
10-0008		21-0026	ZACK, Mathew M. Jr.
*16-0010	WEILL, Hans	*16-0052	ZADI, S.H.
11-0026	WEINBERGER, Casper W.	16-0074	ZAFF, J.A., Jr.
3-0002	WEINBERG, Janet H.	9-0011	ZAVON, H.R.
5-0059		21-0010	ZELLER, H.
19-0031	WEINTRAUB, M.	12-0005	ZELLER, H.V.
16-0095	WEISBURGER, Elisabeth E.	25-0011	ZERKE, Fred H.
2-0015	WEISBURGER, J.H.	6-0015	ZIEF, Morris
* 9-0024		*20-0008	ZIMMERMAN, H.W.
*15-0035		13-0003	ZINGARO, Ralph A.
16-0095		14-0002	
9-0005	WEISBERG, Joseph B.	*16-0010	ZISKIND, Morton, W.
*16-0081	WEISKOPF, Richard	21-0020	ZOOK, W.C.
2-0043	WEISS, H.	17-0002	ZORD, J.A.
17-0039	WELLINGS, F.H.	25-0020	ZWOLINSKI, L.M.
2-0034	WELLINGS, R.A.		
*16-0007	WERNER, Kirk G.		
* 2-0012	WESOLOWSKI, J.J.		
20-0003	WEST, David A.		
*16-0048	WESTLAKE, C.E.		
21-0011	WESTOVER, L.B.		
*16-0013	WHIMSTER, W.F.		
*16-0072	WHITFIELD, Bradford L.		
*15-0041	WICKS, Zeno W. Jr.		
18-0031	WILKENS, Garth L.		
20-0030	WILLIAMS, Albert E.		
26-0011	WILLIAMS, David L.		
*16-0080	WILLIAMS, Faith M.		
*14-0029	WILLIAMS, K.E.		
* 6-0002	WILLIAMS, Susan		
6-0036	WILLIAMSON, K.S.		
5-0057	WILSON, C.		
3-0025	WILSON, E.		
20-0001	WINTON, John M.		
7-0005	WHITACRE, R.		
9-0002			
18-0004	WHITNACK, Gerald C.		
*16-0036	WHITTEMORE, Donald O.		
*16-0011	WHITWELL, F.		
26-0014	WIEBE, William J.		
* 2-0011	WILCOX, Sandra L.		
*15-0025	WILKISS, F.E.		
* 7-0011	WILLIAMS, Colin J.		
6-0017	WILLIAMS, Faith M.		
2-0037	WILLIAMS, Helen		
17-0049	WILLIAMS, Jan-Olaf		
3-0028	WILLS, J.H.		
8-0009	WILSEN, John J.		
4-0045	WILSON, D.C.		
5-0067	WILSON, William, K.		
18-0038	WINNURN, Duane		
* 9-0006	WING, Richard M.		
19-0024	WINTRELL, R.		
*14-0014	WOPSY, Steven C.		
2-0005	WOIDICH, R.		
3-0056	WOJCIK, L.H.		
18-0030			
15-0058	WOLF, Philip C.		
12-0015	WOLFF, Anthony		
20-0052	WOLGEMUTH, Larry G.		
5-0022	WONG, Eugene G.C.		
15-0002	WOOD, J.M.		
15-0047	WONG, P.T.S.		
4-0016	WOOD, A. Stuart		
10-0022			
*12-0003	WOODIF, A.M.		
9-0003	WOOLSON, Edwin A.		
*15-0035	WRIGHT, F.		
*19-0014	WRIGHT, Ralph		
2-0016	WRIGHT, Uels		
5-0030	WU, W.H.K.		
* 9-0006	MUSTHER, David A.		
6-0047	WYNDER, E.L.		
* 9-0024			
*15-0035			

CATS Biweekly Reports

Nos. 1 - 12

Dybern, Bernt I.
WATER POLLUTION -- A PROBLEM WITH GLOBAL DIMENSIONS
AMBIO 3 (3-4):139-45 (1974)

"It seems that no river, no lake, no part of the oceans is entirely free from pollution," writes the author. Both pollution caused by development and pollution caused by lack of development are on the increase, he states, and warns that far-reaching measures are necessary if catastrophes are to be avoided in the future.

A table lists major categories of approximately 60 marine pollutants and their relative harmfulness. The list includes acrylonitrile, arsenic, toluene diisocyanate, vinyl chloride, and phthalate esters.

(Uses and Production)

Anon
BIGGER THINGS MAY BE BREWING IN THE RESINS-FOR-BOTTLES MARKET
Modern Plastics 51 (8): 14, 16 (1974)

1975 may be the big breakthrough year for commercial use of all-plastic barrier bottles for carbonated beverages, a market with domestic potential for about 2 million tons of resin. Solvay has announced a new nitrile barrier resin, supporting the idea that nitrile-based resins will dominate plastics' share of the carbonated beverages market. In mid-1972, the only two nitriles in the bottle field were Monsanto's Lopac and Vistron's Barex. Later, DuPont introduced Vicobar and ICI and Mitsubishi Chemicals offered nitriles. Borg-Warner and Rohm and Haas have discussed their nitrile barrier materials. There is now no commercial nitrile beverage bottle, but Coca-Cola authorized its franchised bottlers to use Lopac.

Monsanto anticipates a big acrylonitrile expansion (300,000 tons/yr) in Texas City by 1976; is building a Lopac plant in Connecticut. Vistron is building a Barex plant in Lima, Ohio, which should be operative by 1975 with initial rated capacity of 9000 tons/yr.

1-0003
ARSENIC

Yeh, Shu et al
FINE STRUCTURE OF BOWEN'S DISEASE IN CHRONIC ARSENICALISM
J. Natl. Cancer Inst. 53 (1): 31-44 (July 1974)

An electron microscope study of 35 skin biopsy specimens taken from patients with Bowen's disease due to chronic arsenicalism describes in detail the histopathology of this specific cancer of the skin.

1-0004
ARSENIC

Tam, Kai C.
ARSENIC IN WATER BY FLAMELESS ATOMIC ABSORPTION SPECTROPHOTOMETRY
Env. Sci. & Tech. 8 (8): 734-6 (1974)

An improved method for the chemical analysis of arsenic and its compounds in drinking water utilizes flameless atomic absorption spectrophotometry. Test runs compared favorably with known methods and results between a number of laboratories were in the same range.

Anon

FLORIDA AND ALL GULF STATES ARE SUING THE EPA AND DuPONT
Env. Sci. & Tech. 8 (8): 690 (1974)

Du Pont's agreement with the EPA to allow temporary dumping of wastes into coastal waters is being challenged by the affected Gulf states. The law suit is concerned with the discharge of antimony, arsenic and cadmium wastes and the EPA's right to enter into such an agreement without consulting the states. Approximately 12,000 tons per month of waste from DuPont's plant in Belle, W. Virginia, has been dumped off the Florida coast.

World Health Organization

LONG-TERM PROGRAMME IN ENVIRONMENTAL POLLUTION CONTROL IN EUROPE. THE HAZARDS TO HEALTH OF PERSISTENT SUBSTANCES IN WATER. Annexes to a Report on a Working Group Convened by the Regional Office for Europe of the World Health Organization. Technical Documents on Arsenic, Cadmium, Lead, Manganese and Mercury. Helsinki, 10-14 April 1972
WHO, Copenhagen, 1973.

Summaries of data on As, Cd, Pb, Mn and Hg. Book, produced to aid those working on problems of metal toxicology and related matters, has been reproduced in English, French and Russian, but it is not for sale. It is available only to those with a bona fide need.

Data included refer to the levels of various metals in food, air and water; text covers toxicological impact of all these occurrences. Data are interpreted as to the degree of hazard and steps that may be taken to contain or reduce it, but opinions are those of the working group, not necessarily WHO opinions, so should not be considered valid at all times. [Review in: *Fd. Cosmet. Toxicol.* 12 (2): 243 (April 1974)]

International Agency for Research on Cancer
IARC MONOGRAPH ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN.
SOME INORGANIC AND ORGANOMETALLIC COMPOUNDS. Vol. 2.
International Agency for Research on Cancer, Lyon, 1973. 181pp. \$1.50

Report of the IARC Working Groups on the Evaluation of the Carcinogenic Risk of Chemicals to Man on meetings held in Lyon in October and November 1972. October meeting considered asbestos only; November meeting covered a number of environmentally important metals (including arsenic) and their compounds. The case for the carcinogenicity of arsenic to man is convincing in spite of the absence of positive results in animals. Discussion of crystal structure of different forms of asbestos is important because of increasing evidence indicating influence of crystal shape on the induction of tumors by asbestos. [Review in: *Fd. Cosmet. Toxicol.* 12 (2): 244-5 (April 1974)]

ARSENIC

See also: 1-0001

Anon

PROTESTING POLLUTION

Chem. Wk. 115 (7): 14 (Aug. 14, 1974)

Reserve Mining faces more imminent shut down of its taconite ore processing plant at Silver Bay, Minn., following court rejection of company's on-land disposal plan, proposed as alternative to discharging wastes into Lake Superior. Asbestos-like fibers entering the lake are blamed for contaminating that area's drinking waters. The Court upheld the state's view that discharging plant tailings into the Palisades Creek bed was environmentally unsound.

Possible alternative: move plant to Babbitt, Minn., and return plant wastes to pits created by mining the ore. Reserve estimates such a move would cost \$530-570 million; earlier claimed Babbitt had insufficient water for taconite processing operations.

Gross, Paul

IS SHORT-FIBERED ASBESTOS DUST A BIOLOGICAL HAZARD?

Arch. Env. Health 29 (2): 115-7 (Aug. 1974)

A review of the findings from a number of research laboratories in the U.S. and abroad on the investigative work concerned with the carcinogenic effect of asbestos fibers, which may cause fibrosis or cancer. The author reports on the work that has been done and concludes that short-length fibers (<5 microns) do not cause mesotheliomas and gastrointestinal cancer.

*ASBESTOS

See also: 1-0007

Anon
ADDITIVES FOR PLASTICS
European Plastics News 1 (3): 21 (July 1974)

At the International Business Contact Club meeting held in Brussels recently, Michigan Chem. Corp's H.E. Stepnieszka advocated altering the structure of the urethane molecule in order to produce an inherently flame retardant foam. He also discussed methods for the use of retardants. F. J. Prescott (GAF Corp.) proposed a substitution of intermediates in urethane systems to achieve fire retardance.

Anon
ADDITIVES FOR PLASTICS
European Plastics News 1 (3): 21 (July 1974)

E.S. Michaels (Stauffer Chemical Co.) gave a 5-year projection of the U.S. market for fire retardant chemicals at the recent meeting of the International Business Contact Club held in Brussels. He stressed the importance of regulatory standards to promote the use of long-known fire retardants. An examination of plastics consumed in the USA in 1972 showed fire retardant chemicals being used in the following materials: PVC 20%, polystyrenes 7%, polyesters 15%, polyamide 30%, but in less than 1% of the total polyolefins.

Anon
GROWTH OF POLYURETHANE FOAMS SLOWING DOWN
Chem Eng. News 52 (32): 7-8 (August 12, 1974)

Despite problems with flammability and a temporary slowing in market growth, producers foresee that foam demand will triple through this decade with construction uses making the largest gains. Chart and table illustrate anticipated growth and use markets. An industry-supported \$5 million research program on flammability will also seek to develop relevant lab-scale fire safety testing procedures.

Two new materials expected to have wide use in making flame-retardant foams by the end of the decade are Olin's Thermolin RF230 and isocyanurates from Upjohn, Uniroyal, and Mobay. Thermolin RF230 is a polyol from trichlorobutylene oxide instead of propylene oxide; it can be reacted with isocyanates to make polyurethanes that burn more slowly and give off little smoke in boardstock or foam-in-place applications. Available in small quantities; Olin will bring a 300 million lb/yr plant on stream in December. Isocyanurates derive flame retardance from a cyclic trimer of polymeric isocyanate that is reacted with a hydrogen-containing compound to form the foam.

Crossland, Janice

AEROSOLS

Environ. 16 (6): 16-20, 25-6 (July/August 1974)

Review of known and potential hazards of the chemicals in aerosol spray products as well as hazards from the container itself. Discusses vinyl chloride, an ingredient in some hair sprays and pesticide sprays, which has been linked to liver cancer in workers in plastics industry. Industry claims factory levels kept to 50 ppm vs. OSHA allowable concentration (until recently) of 500 ppm; hair spray users may be exposed to 250 ppm. Also discusses fluorinated hydrocarbons (e.g., Freons, Halothane), including TLV, effect on the nervous system, fatalities from inhalation. Apparently, little is yet known about aerosol toxicity; much more has to be learned about the effects of long-term exposure to low doses of aerosol spray.

Steele, G., Jr., and Sjogren, H.O.

CROSS-REACTING TUMOR-ASSOCIATED ANTIGEN(S) AMONG CHEMICALLY INDUCED RAT COLON
CARCINOMAS

Cancer Res. 34 (8): 1801-7 (1974)

Cross-reacting tumor-specific surface antigens were demonstrated by *in vitro* microcytotoxicity assays among colon carcinomas induced by three separate chemical carcinogens in two different rat strains. One of the chemicals used was DMH, 1,2-dimethylhydrazine·2HCl.

The tests show that lymphocytes from rats bearing primary or isografted colon tumors or from rats immunized with cultured colon tumor cells were consistently cytotoxic to multiple rat colon tumor target cells. Sera from 3 colon cancer-bearing rats were also tested. It is postulated that the chemically induced rat colon carcinomas tested share common tumor-specific surface antigen(s).

Murphy R.L.H., Jr., and Peters, J.M.

A 6-YEAR FOLLOW-UP OF 27 WORKERS EXPOSED TO TOLUENE DIISOCYANATE

Abstract of Paper presented at the Annual Meeting of the American Thoracic Society/American Lung Association, May 13-15, 1974, Cincinnati, Ohio

An in-depth examination of general health and pulmonary function was made on 27 workers exposed to toluene diisocyanate (TDI). The time period covered the years 1966, 1967, and 1969 with a three year follow up in 1972. Half of the workers had left that place of employment during the intervening years. Those who remained at the plant had significantly worse pulmonary function. Most of them however, were clinically well.

Wright, Usha, and Battigelli, Mario C.

MECHANISM OF SMOOTH MUSCLE RESPONSE TO TOLUENE DIISOCYANATE

Abstract of Paper presented at the Annual Meeting of the American Thoracic Society/American Lung Association, May 13-15, 1974, Cincinnati, Ohio

The cause of the bronchial difficulties experienced as the result of exposure to TDI (toluene diisocyanate) has been interpreted by some as an immune mechanism. The authors, using guinea-pig ileum segments to investigate the effects of TDI, have concluded that the immune mechanism may not necessarily explain the diseased condition, especially when the asthmatic individual has not been previously exposed to TDI.

1-0017
ISOCYANATES(Organic)
(Production)

Anon
BAYER AG AND CYDSA S.A.
Rubber Age 106 (8): 6 (1974)

Industrias Cydsa Bayer S.A., in which Bayer has a 40% interest, plans a 12,000 ton/year toluene diisocyanate plant in Mexico which is to be expanded to a yearly output of 24,000 tons

ISOCYANATES(Organic)

See also: 1-0001
1-0012

Anon

FURTHER PROGRESS IN COAL GASIFICATION

Chem. Eng. News 52 (32): 17-8 (August 12, 1974)

Brief description of two new developments provides information on M.W. Kellogg's low-B.T.U. coal gasification process and on the successful long-term tests of a methanation step for W. Germany's Lurgi Mineraloeltechnik's high-heating-value, pipeline gas-from-coal process. Includes investment and operating cost estimates.

In the Kellogg process hot gases go from the gasifier to cyclones for particulates removal, and Kellogg claims that the ash and dust from the cyclone can be used for landfill without further treatment. By-product tars and oils can be burned as fuels or used as a source of chemicals. Sulfur can be removed in a number of different ways.

1-0019
MODEL ECOSYSTEMS
(New Book)

Ferris, James J. et al
FRESHWATER ECOSYSTEM RESEARCH IN WATER QUALITY MANAGEMENT
Env. Sci. & Tech. 8 (8): 706-10 (1974)

Modeling techniques help solve problems in biological production and environmental quality. This paper reviews the research activities of the Special Committee for the International Biological Program (SCIBP), created in 1964 by the International Council for Scientific Unions (ICSU). Research was aimed at defining the biological basis of productivity for human welfare and allowed global studies on organic production on land, in fresh waters, and in the seas; potentialities and uses of new and existing natural resources; and human adaptability to changing conditions. U.S. biome aquatic studies are described briefly as are the various aquatic models, including CLEAN (Comprehensive Lake Ecosystem Analyzer) the biome's total aquatic ecosystem model.

1-0020
MODEL ECOSYSTEMS

Daetz, Douglas and Pantell, R.H., eds.
ENVIRONMENTAL MODELING: ANALYSIS AND MANAGEMENT
Dowden, Hutchinson and Ross, Inc., P.O. Box 699, 523 Sarah St.,
Stroudsburg, Pa. 18360. 1974. \$12

This book is designed for advanced students and professionals. Systems techniques as applied to air quality, water, waste, and ecosystem management and interdisciplinary issues are illustrated.

*1-0021
OPTICAL BRIGHTENERS

Anon

ADDITIVES FOR PLASTICS

European Plastics News 1 (3): 21 (July 1974)

Six major polymers used in outdoor applications in the USA contain zinc oxide as an ultraviolet stabilizer. Economic advantages were cited by F.J. Schrade (lead, Zinc Research Organization, Inc.) at a recent meeting of the International Business Contact Club, held in Brussels.

*1-0022
OPTICAL BRIGHTENERS

Anon

COATING PHOTO-INITIATOR

Modern Plastics 51 (8): 24 (1974)

Union Carbide's Coating Materials Department is promoting (DEAP), 2,2-Diethoxyacetophenone, as an additive that absorbs impinging light and is particularly useful for curing acrylate coatings in an inert atmosphere. Transparent coatings and inks provide a market for this product.

See also: 1-0001

1-0023
POLYURETHANES
(Production)

Anon

NEW PLANTS, NEW PRODUCTS FOR UNITED FOAM
Modern Plastics 51 (8): 86 (1974)

United Foam Corp., Compton, Calif., opened urethane foam manufacturing plants at Shawnee, Okla., and Denver, Colo., and a foam fabrication plant at Louisville, Ky. Now operating 10 urethane foam manufacturing facilities and 7 foam fabricating plants, United produces carpet underlay, furniture cushioning and padding, automotive interior parts, packaging materials, etc. A new ceiling material for mobile homes, called Tylon, has received a class B flame rating.

1-0024
POLYURETHANES
(Production)

Anon

UNITED FOAM CORP.
Rubber Age 106 (8): 71 (1974)

New additions to the facilities of the United Foam Corp. brings their total to 10 plants for the manufacture of urethane foam and seven fabricating plants. Additions include a new 100,000 sq. ft. plant at Shawnee, Okla., and expansion of the Denver, Colo., facility to 100,000 square feet.

1-0025
POLYURETHANES
(Company News)

Anon
ARMSTRONG CORK CO.
Rubber Age 106 (8): 6 (1974)

The urethane foam business of the Armstrong Cork Co., of Lancaster, Penna., is being sold to Fluorocarbon Co., of Anaheim, Calif. This company will purchase most of Armstrong's assets in cast urethanes.

1-0026
POLYURETHANES
(Uses)

Anon
POLYTHANE MOLDED PRODUCTS CORP.
Rubber Age 106 (8): 6 (1974)

Laserthane Division of Laser-Sanders Corp., Doylestown, Penna., which manufactures polyurethane industrial tires, has been purchased by Polythane Molded Products Corp., Levittown, Penna.

See also: 1-0012

Stewart, Richard D. et al
USE OF BREATH ANALYSIS TO MONITOR TRICHLOROETHYLENE EXPOSURES
Arch. Environ. Health 29 (1): 6-13 (July 1974)

Breath analysis curves were prepared from data obtained from 20 volunteers (10 male, 10 female) who had inhaled TCE vapors at 20, 100, or 200 ppm. Tests on breath samples were made at one, three, and 7 1/2 hours postexposure. The data were highly reproducible in the early postexposure period. Breath analysis can be used as a rapid method for determining recent and time-weighted average exposure to TDI.

TRICHLOROETHYLENE

See also: 1-0030

Anon
OIL SHALE
Environment 16 (6): 22 (July/Aug. 1974)

Oil shale mining in Colorado, Utah, and Wyoming will yield cancer-inducing wastes from "combustion retorting" -- a technique for separating oil from shale rock. Denver Research Institute estimates that by 1979 yearly production will create about 60 million tons of these wastes containing about 680 tons of carcinogenic materials (polycyclic aromatic hydrocarbons such as 3,4-benzopyrene). By 1987, the carcinogenic wastes may be seven times greater than in 1979. Potential hazards: wastes entering the food chain, being released into air, or causing spontaneous combustion. Additional carcinogens may exist in the water resulting from the retorting process. Large amounts of industrial water, needed for the entire operation, will add to waste disposal problem and subtract from farm and ranch use.

Anon

STILLBIRTHS AND MISCARRIAGES IN WIVES OF VINYL CHLORIDE WORKERS STUDIED:
Env. Health Letter 13 (16): 3 (Aug. 15, 1974)

"Very preliminary" data reported on by Dr. Irving Selikoff, Mount Sinai Medical Center, hint at the possibility of a higher-than-normal incidence of stillbirths and miscarriages among wives of workers exposed to vinyl chloride. At one plant, the rate of those fetal wastages was 142 per 1,000 pregnancies; at another plant, it was 72 per 1,000. There is, however, no available norm for comparison purposes. Dr. Selikoff did report that a chromosomal analysis of the cells of 11 workers exposed to vinyl chloride showed a higher incidence of abnormalities and chromosomal breakages than occurred in a group of 10 controls. The 1,000 or so lymphocytes studied so far is a small sample; 22 other workers are undergoing chromosome tests.

Husbands of all these women were exposed not only to vinyl chloride but also to other chemicals at work

Anon

VINYL CHLORIDE AT MOLECULAR LEVEL
Science News 106 (5): 71 (Aug. 3, 1974)

Because of the announcement of the deaths of 15 vinyl-chloride (VC) workers, the National Institute of Environmental Health Sciences conducted a conference at Pinehurst, N.C., on the action of vinyl chloride on the human body and the magnitude of the plastics problem. Apparently, enzyme activation in the body breaks down the vinyl chloride monomers (single molecules) into monochloroethylene oxide. B.L. Van Buren suggests that the VC molecules first bond to membranes or other cell proteins before being broken down and "activated" into a carcinogenic species; he also suspects trichloroethylene, used widely as a degreasing agent and also as an anesthetic during dental surgery, as a potential carcinogen. Other researchers reported: breakdown products react with the cell constituents glutathione and cysteine; and the greater susceptibility of starved rats to VC effects may be associated with depletion of glutathione during fasting.

Anon
VINYL CHLORIDE: PLAY-BY-PLAY
HAPPI 11 (7): 46 (1974)

The MCA, CPSC, NIOSH, OSHA, EPA, FDA, and even GAO have all been involved in the VCM and PVC controversy. In early June, EPA planned to set emission limits for manufacturing plants but later in June reported that air sampling showed no hazardous levels of either VCM or PVC around manufacturing plants. MCA will administer four VCM/carcinogenicity research projects funded by U.S. producers of the chemical.

Anon
LIVER CANCER RISKS ASSOCIATED WITH THE PROCESSING OF PVC VERY LOW
European Plastics News 1 (3): 2 (July 1974)

After the announcement that inhalation of vinyl chloride monomer may have caused liver cancer (angiosarcoma) in rats, an epidemiological study of workers at major PVC polymerization plants in Great Britain was conducted. No increase in cancer of any sort was found. Later diagnoses, however, found 18 cases of angiosarcoma in U.S. and European PVC process workers; 16 of these were fatal. The workers were exposed to very high levels of VC monomer over 20 years.

Exposure levels have been lowered from 1000 ppm in 1955, to 300 ppm in 1973; are now at 50 ppm; should go down to 10 ppm, and to 5 ppm in new plants. Although rats contract liver cancer at 50 ppm, there is yet no proven link between rats and humans. Average exposure levels of 5 ppm are claimed in the fabrication industry; where higher, improved ventilation could reduce the level to 5 ppm or lower. In summary, it is not possible to prove zero risk, but concentrations of VCM absorbed by public from handling PVC or eating food wrapped in PVC films are considered negligible.

Anon
EPA IS BELIEVED MOVING.....
JAPCA 24 (8): 734 (1974)

OSHA has issued policy guide lines for workers exposed to vinyl chloride, setting the Safety Standard at 50 ppm with a stipulation that only qualified State or Federal industrial hygienists run the tests and issue citations as necessary. As the aftermath of the hearings held by OSHA on this problem, it is believed that EPA will move to declare vinyl chloride a hazardous air pollutant since it has been linked to a rare form of liver cancer.

Anon
EPA's INTEREST IN VC.....
JAPCA 24 (18): 734 (1974)

Reports of fatal liver cancer in two persons living downwind of vinyl chloride plants and of two similar deaths of workers with only marginal exposure have heightened EPA's interest in VC as a hazardous air pollutant.

1-0035
VINYL CHLORIDE

Anon

FDA SOON WILL LIMIT VINYL CHLORIDE.....
Chem. Eng. News 52 (33): (8 Aug. 1974)

FDA Commissioner, Alexander M. Schmidt, reports that vinyl chloride packaging of food and drugs will soon be restricted so that the limit of VC seepage from the package will be at the lowest detectable level when using current analytical methods.

1-0036
VINYL CHLORIDE

Anon

SURVEY OF VINYL CHLORIDE MONOMER.....
Chem. Wk. 115 (5): 32 (July 31, 1974)

NIOSH has funded Bendix's Launch Support Div. to study occupation exposure to vinyl chloride monomer in 3 VCM and 15 PVC plants. The work will cover exposure records and test present exposures. NIOSH will report on its own survey of 5 PVC plants.

Anon

SECOND THOUGHTS ON USING PVC

Chem. Wk. 115 (5): 19-20 (July 31, 1974)

Packaging consumes 325-million-lbs/yr of PVC resin. Enforcement of a proposed standard of 1 ppm could shutdown all U.S. PVC plants, causing loss of up to 2.2 million jobs and a domestic production value of \$65-90 billion/yr. The search for substitute materials is on, but for some applications there is no substitute for PVC. Brief review of PVC uses and quantities.

Most PVC plants are enclosed. Goodrich plans to build an "outdoor" plant. Some manufacturing problems are reviewed, as are possible pollution control methods.

Maltoni now suspects all carbon-chloride groups as potential carcinogens; is studying VCM inhalation at 25 ppm down to 1 ppm and testing the effect of ingestion. MCA studies have linked brain and lung damage to VCM exposure.

Anon

PROPOSED CHANGE IN TEST PROCEDURES FOR OCTYLTIN STABILIZERS IN VINYL
CHLORIDE PLASTICS

Fed. Reg. 39 (156): 28899-900 (Aug. 12, 1974)

The FDA is proposing a change in extraction testing procedures. A comprehensive testing program, in which various PVC formulations were tested with both foods and food-simulating solvents, indicates that a limitation of 0.5 ppm (instead of the present 1 ppm) total octyltin stabilizers in food-simulating solvents will assure that total migration of the permitted octyltin stabilizers will not exceed the currently permitted 1 ppm in food.

Anon
B.F. GOODRICH.....
Env. Sci. & Tech. 8 (8), 691 (1974)

B.F. Goodrich feels that the proposed standard for vinyl chloride of no detectable exposure level cannot be met with present technology and would impose job losses on production workers and employees in other companies which use PVC. Goodrich will undertake its most intensive R&D effort to research lowest possible levels.

Anon
INDUSTRY HAS ITS SAY ON VCM
Modern Plastics 51 (8): 12 (1974)

At OSHA's late June hearing on worker exposure to VCM, discussion centered on OSHA's recommended "no detectable level" standard. For PVC plants, industry proposes a level of 40 ppm VCM and a maximum daily time-weighted average of 25 ppm, with further reduction of these levels to 25 and 10 ppm, resp., by 5 Oct. 1976. For VCM plants: a 25 ppm ceiling and a 10 ppm time-weighted average with reduction by 5 Oct. 1976 to 10 and 5 ppm, resp.

Dow and Diamond Shamrock report VCM levels under 50 ppm and no cases of liver cancer among past and present workers. Sweden has set a 20 ppm VCM level, reports no liver cancer cases.

1-0041
VINYL CHLORIDE
(Production)

Anon
VINYL CHLORIDE MONOMER
Rubber Age 106 (8): 20 (1974)

Vinyl chloride monomer production has been cut back 8-10 percent generally as a result of the OSMA emergency temporary standard of 50 ppm, according to industry sources. Most companies claim that they are unable to operate at potential.

1-0042
VINYL CHLORIDE
(Production)

Anon
UPDATE
Modern Plastics 51 (5): 43 (1974)

Price increases noted for FVC and chlorins. Also, Tenneco reports that its 1973 PVC resin expansion will be 127,000 metric tons, an increase of 18,000 tons over earlier production report.

1-0043
VINYL CHLORIDE
(Book)

Albright, Lyle E.
PROCESSES FOR MAJOR ADDITION-TYPE PLASTICS AND THEIR MONOMERS
McGraw-Hill, Inc., NYC 10020. 1974. 385pp. \$22.50

Process descriptions for vinyl chloride polymer and monomer include critical analyses, key features, and bottlenecks. Similar treatment is given to three other major polymers, PE, PP, and PS. Alternate processes and sales trends are also discussed.

1-0044
VINYL CHLORIDE

Anon
VINYL CHLORIDE TESTS
Rubber Age 106 (8): 74 (1974)

Vinyl chloride monomer can be readily detected by gas chromatography to 1 ppm, according to DeBell and Richardson Testing Institute, Enfield, Conn. Analyses are being performed on air samples and vinyl resin containers are being tested for monomer transfer to the materials in the containers.

1-0045
VINYL CHLORIDE

Gross, Sidney
RASH IS NOT RIGHT
Modern Plastics 51 (8): 33 (1974)

This editorial admits that the exposure of workers to VCM deserves serious concern and that strict regulations are essential, but urges OSHA to evaluate seriously industry's proposal to reduce sharply VCM air levels instead of dropping to the zero ppm level.

VINYL CHLORIDE

See also: 1-0001
1-0013

Colton, John B., Jr. et al
PLASTIC PARTICLES IN SURFACE OF THE NORTHWESTERN ATLANTIC
Science 185 (4150): 491-7 (Aug. 9, 1974)

Plastic particles of various types and characteristics have been found in the Sargasso Sea and in coastal waters of New England. Although the particles are not toxic, they are not biodegradable, and the potential dangers to fish are discussed briefly. At the present level of occurrence, no serious biological consequences are likely. Increasing production of plastics and present waste disposal practices forebode increases of these particles in rivers, estuaries, and the open ocean.

Buchnea, Deytro and Buchnea, A.
AIR POLLUTION BY ALUMINUM COMPOUNDS RESULTING FROM CORROSION OF AIR CONDITIONERS
Env. Sci. & Tech. 8 (8): 752-5 (1974)

Air conditioner units operating at peak capacity gave off a dust which contained approximately 124 micrograms of aluminum compounds per cubic meter. In a 10-hour period in an air conditioned environment one could inhale 513 micrograms of these compounds. This concentration is much higher than the standard set by the Government of Ontario

1-0048
GENERAL INFORMATION

McGill, D.S. and Motto, J.D.
AN INDUSTRIAL OUTBREAK OF TOXIC HEPATITIS DUE TO METHYLENEDIANILINE
New Eng. J. of Med. 291 (6): 278-82 (Aug. 8, 1974)

Clinical evidence points to methylenedianiline as the etiological factor in 12 cases of hepatitis which developed in 12 young male workers exposed to MDA. The skin was the major portal of entry suggested by circumstantial evidence. When re-examined later, none had chronic liver disease.

1-0049
GENERAL INFORMATION

Anon
PRECAUTIONS FOR MBK
Arch. Environ. Health 29 (2): 120 (Aug. 1974)

Additional animal studies on Eastman Kodak's product, methyl n-butyl ketone (MBK), are being conducted by the company after reports that personnel exposed to MBK in certain types of industrial operations developed peripheral neuropathy. In earlier studies, rats exposed to inhalations of MBK at high levels, over four months, developed nerve changes indicative of peripheral neuropathy.

Anon
SEVEN THOUSAND OKLAHOMANS
Env. Sci. & Tech. 8 (8): 690 (1974)

Phosphorus trichloride, manufactured by FMC's industrial chemicals division, seeped from freight cars after a train wreck in Oklahoma, affecting 7000 persons. Over 200 required treatment for burning lungs, nausea, and other ill effects.

Anon

SUMMARY OF PENNSYLVANIA ENVIRONMENTAL LAWS, RULES AND REGULATIONS

Pennsylvania Environmental Council, Inc., 313 S. 16th St., Philadelphia, Pa. 19102.
1974. 66pp. \$5.00

Announcement in: JAPCA 24 (8): 797 (1974) (No abstract)

Sullivan, Richard J.

NOTICE OF PUBLIC HEARING ON PROPOSED "RULES AND REGULATIONS ESTABLISHING SURFACE WATER QUALITY STANDARDS"

Office of the Commissioner, Department of Environmental Protection, State of New Jersey, Trenton, N.J. 08625, July 5, 1973

These proposed water quality criteria list certain substances (arsenic, barium, cadmium, chromium (hexavalent), lead, mercury, selenium, and silver) that shall not exceed the specified limits or one-twentieth of the TL_{50} value at 96 hours, whichever is lower. The limit set for arsenic is 0.05 mg/l.

Beitz, Lieselotte, Haase, Joachim et al

DETECTION OF TRACES OF NOXIOUS SUBSTANCES IN AIR, WATER AND BIOLOGICAL MEDIA USING X-RAY FLUORESCENT ANALYSIS

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 51)

In the investigation of the effect of environmental pollution on human beings, chemical monitoring of the air, water and earth, as well as examining vegetable and animal products, is of fundamental importance. Comprehensive investigations are necessary to obtain exact statistics and other data on the present burden on the atmosphere and biological media. The critical toxic concentrations of noxious substances such as S, Pb, Cd, Zn, As, Hg and Sb must be laid down in collaboration with the medical profession.

Recent research has shown that X-ray fluorescent analysis (XFA) can be used successfully to solve the problems quoted above on account of the short time required for the analysis (40-800 secs.), the high reproducibility of the values and the possibility of total automation. Methods of analyzing the air, water, noxious substances in vegetable products are described.

Holmquist, Ivar

INVESTIGATIONS OF THE ABSORPTION OF SOME METALS AMONG PEOPLE IN THE SURROUNDING AREA OF A SMELTING PLANT

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 63)

The investigation was carried out in order to show to what extent emission of metals from a smelting plant, Boliden Aktiebolag, Ronnskar, in the north of Sweden, could be found in blood and urine among people in the surrounding area and if any biological effects of the emission could be observed.

Analyses of metals in urine have been made on 3 groups of women living at different distances and in various directions from the smelting plant. Arsenic, lead, cadmium and mercury contents have been tested. The analyses do not show any unnormally high percentages of those metals in the urine in any of the groups. Regarding arsenic some differences between the groups could be noted owing to meteorological factors. The emission of metals from the smelting plant do not seem to give people in the surrounding area any content of metals in urine that could indicate any risk at all.

Gordus, Adon A.

HAIR AS A DIAGNOSTIC INDICATOR OF HUMAN EXPOSURE TO TRACE ELEMENTS

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 146)

Samples of human scalp hair from heterogeneous, selected homogeneous, and industrially exposed population groups are being analysed for up to 40 elements using a combination of instrumental neutron activation analysis (INAA) and flameless atomic absorption spectrometry (FAAS). Visual and microscopic examination of the hair samples provides data on hair color and morphology. Personal data, including information on age, height, weight, shampoos used, food preferences, etc., provide a means of determining the degree to which the trace element content of hair is dependent on personal factors. Following washing of about 20 mg. samples of hair, INAA provide data for Na, Mg, Al, S, Cl, K, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Se, Br, Rb, Sr, Ag, Sb, Te, I, Ba, La, Sr, Au, and Hg. The irradiated hair samples are then dissolved in HNO_3 and, using FAAS, data are obtained for Li, Be, Si, Ga, Mo, Cd, Sn, Cs, Tl, Pb, Bi, and, if necessary, more reliable data for K, Ti, Fe, Ni, Cu, Zn, Rb, Sr, Ag, Sb, and Ba.

Woldich, H. and Pfannhauser, W.

THE INCIDENCE OF THE HEAVY METALS LEAD, CADMIUM, MERCURY, TIN AND ARSENIC IN FOODSTUFFS AND FEEDSTUFFS IN AUSTRIA

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 97)

The incidence of the heavy metals lead, cadmium, mercury, tin and arsenic in various foodstuffs in Austria was established and substantiated by thorough research by the Institute. A large volume of statistics on foodstuffs with an especially high incidence, in particular, fish, shellfish and offal, is presented. In addition representative tests on other types of food are quoted.

The highest mercury contents were to be found in tinned tunny. Offal and shellfish were fairly strongly contaminated with cadmium, as were some cereals, whilst the arsenic content of various kinds of offal, cod liver for example, was noticeable. While investigating arsenic, it was noticed that smoked products had slightly, but significantly, higher contents compared to unsmoked products. Contamination during the smoking process should therefore not be excluded. The toxicological risk of organic metal compounds is considerable. The incidences established are compared with international standards and results obtained in other countries.

Goldstein, B., Webster, I. et al
THE USE OF NONHUMAN PRIMATES IN PNEUMOCONIOSIS AND OTHER INDUSTRIAL DISEASE
RESEARCH
Env. Res. 7 (3): 320-9 (June 1974)

Monkeys and baboons serve as agents for industrial disease research in South Africa, after having undergone health examinations. Studies are underway on the physiological parameters of baboons, which are being used in current experiments to determine the effects of asbestos country rock and asbestos-cement, the dose response after exposure to asbestos dusts, the effectiveness of drugs in preventing and treating silicosis, and absorption by the body of lead particles of varying sizes.

Morgan, A.
ADSORPTION OF HUMAN SERUM ALBUMIN BY ASBESTIFORM MINERALS AND ITS APPLICATION
TO THE MEASUREMENT OF SURFACE AREAS OF DISPERSED SAMPLES OF CHRYSOTILE
Env. Res. 7 (3): 330-41 (June 1974)

In studies in which iodine-131 labelled human serum albumin was used to measure the adsorption of protein by different asbestiform minerals, the amount of albumin adsorbed by chrysotile was affected by the degree of dispersion, the limiting value being approximately 70 mg/g for fully opened samples at an equilibrium concentration of 0.1 mg/ml. Because the surface area of chrysotile increases with magnesium removal, albumin adsorption is only effective in measuring the surface area of intact chrysotile.

Albumin adsorption thus provides a useful means for quantifying the degree of dispersion of asbestos in suspensions used for injection into experimental animals.

Kalašić, Ivo

EARLY DETECTION OF EXPIRATORY AIRFLOW OBSTRUCTION IN CEMENT WORKERS
Arch. Env. Health 29 (3): 147-9 (Sept. 1974)

Measurements of maximal expiratory flows at higher and at lower lung volumes in 39 nonsmoking cement workers and 29 nonsmoking controls showed that cement workers had lower expiratory volumes, suggesting the existence in these workers of a reduction of elastic recoil or an increase in airway resistance, or both.

A previous study of asbestos workers indicated that long-term exposure to occupational dusts may promote the obstruction of small airways.

El-Sewefy, A.Z., Sheen, H. et al
BONE MARROW CHANGES IN ASBESTOSIS

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 178)

Seventeen workers from an Egyptian asbestos-cement pipe factory exposed to asbestos dust, and seldom exposed to silica and cement dust for a period of 10 to 26 years of age range from 30 to 57 years were examined clinically, radiologically, and hematologically including bone marrow puncture.

The result showed a state of leucopenia, increased sedimentation rate, the bone marrow showed a marked to extreme degree of generalised hyperplasia, the outstanding feature is the marked increase in the number of reticulum cells, some of them are immature and binucleated.

These results are discussed in the text.

Montague, K. and Montague, P.
FIBER GLASS
Environ. 16 (7): 6-9 (Sept. 1974)

Some 33,000 consumer products contain fiber glass, which, according to reports through the 1970's, was considered harmless to humans. However, in 1967 Dr. I.J. Selikoff, who first provided epidemiological evidence of the dangers of lung cancer, asbestosis, and mesothelioma from asbestos, warned against the use of fiber glass. In 1972, Dr. M.F. Stanton reported small fiber glass particles were potent carcinogens. Long, thin particles (thinner than 3 microns; longer than 20 microns) of asbestos, fiber glass, or alumina are the most hazardous and are potent carcinogens in the rat.

Wilcox, Sandra L. et al
ESTABLISHING SAFE AMBIENT AIR QUALITY LEVELS FOR EIGHTEEN HAZARDOUS POLLUTANTS
Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 135)

Describes data gathering methods, analysis and discussion of results and specific health effects of each pollutant in a study conducted to provide data for the development of safe ambient air quality levels for 18 hazardous pollutants, including 13 metals, asbestos, boron, chlorine, fluorides, and selenium.

Wesolowski, J.J. et al

ASBESTOS IN THE CALIFORNIA ENVIRONMENT

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 198)

World consumption of asbestos in last 30 yrs has increased from about 500,000 tons/yr to about 4 million tons/yr. Californians are widely exposed to asbestos from both natural and industrial sources. Inhalation of sufficiently great amounts of asbestos fibers is associated with asbestosis, lung cancer, and mesothelioma; there is suspicion of gastrointestinal cancer from ingestion of asbestos. Mechanism of pathogenicity may depend on fiber size; abundance of very small particles indicates need for electron microscopy. Paper discusses sampling methodology and electron microscope techniques used to identify, count, and size asbestos particles in California environment.

Fondimare, A. et al

QUANTITATIVE EVALUATION OF ASBESTOS DUST LEVELS IN LUNGS AND PLEURA BY OPTICAL AND ELECTRON MICROSCOPY

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 151)

Studies of fifteen workers, exposed to asbestos dust, were compared to studies of others in whom asbestos or ferruginous bodies were discovered but who had not had significant occupational exposure. Expectations, pneumonectomy samples and autopsy material were studied.

After studying the resulting anatomical-clinical data from the viewpoint of occupational risk a quantitative lab research study was made on asbestos. Electron microscope results showed that in subjects exposed to a high occupational risk, the dust level was of the order of 10^4 to 10^5 asbestos bodies/4 gr of lung; the number of naked fibers in the same sample would range from 10^6 to 10^7 . At these dust levels, subjects showed fibrosis, broncho-pulmonary or mesothelioma lesions. Dust figures were generally much lower for subjects only slightly or moderately exposed to asbestos.

Bignon, J. et al

EVALUATION OF THE LEVEL OF ASBESTOS DUST IN THE LUNGS BY MICROFILTRATION OF THE EXPECTORATION AND GASTRIC JUICE

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abst. No. 150)

The use of microfiltration to identify and count the ferruginous (asbestos) bodies and asbestos fibers in expectorations and gastric secretions from an empty stomach and in the fragments of pulmonary tissue is described.

Microfiltration is a simple, easily reproducible technique for determining that asbestos is the cause of certain diagnosed thoracic diseases or even cancer of the stomach and for evaluating the level of asbestos dust in workers' lungs. However, differences in the results noted via microfiltration vs. centrifugation indicates that the various laboratories conducting such studies should discuss the methods.

ASBESTOS

See also: 2-0045, General Information

BORON

See: 2-0011, Asbestos

Stoltz, D.R., Poirier, L.A. et al
EVALUATION OF SHORT-TERM TESTS FOR CARCINOGENICITY
Toxicol. Appl. Pharmacol. 29 (2): 157-180 (Aug. 1974)

Eight abbreviated test systems evaluated for their effectiveness in assessing the carcinogenicity of chemicals were concerned with accelerated tumor formation, chromosome aberrations, mutagenesis, DNA repair synthesis, teratogenesis, in vitro cell transformation.

Ethyleneimine and β -propiolactone are among several carcinogens that have given positive responses with the differential chromosome staining procedures.

Anon
OSHA REGULATIONS ON CHEMICAL UPHELD
Chem. Eng. News 52 (35): 4 (Sept. 2, 1974)

The U.S. Court of Appeals for the Third Circuit in Philadelphia upheld OSHA's permanent rules regulating ethyleneimine as a suspected human carcinogen, basing its decision on two separate controlled animal studies. The regulations cover worker exposure, work practices, and medical surveillance for contact with solid or liquid mixtures containing more than 1% by weight or volume of the chemical. The court felt that the Secretary of Labor made a legal rather than a factual determination in extrapolating from human to animal studies, and that the Secretary in effect determined that the finding of carcinogenicity in two species of animals necessitates that the chemicals involved must be treated as carcinogens in man.

Foltz, Virginia and Fuerst, Robert
MUTATION STUDIES WITH *DROSOPHILA MELANOGASTER* EXPOSED TO FOUR FLUORINATED
HYDROCARBON GASES
Env. Res. 7 (3): 275-85 (June 1974)

The mutagenic potential of four fluorinated hydrocarbon gases, Freon C-318 (perfluorocyclobutane), Genetron-23 (fluoroform), Genetron-152A (1,1-difluoroethane), and perfluorobutene-2, was tested on *Drosophila melanogaster*, using the frequency of sex-linked recessive lethals as a measure of activity. All four gases were mutagenic to *Drosophila* under the test conditions, but specific comparisons of mutagenicity among the gases cannot be made because of differences in the exposure time of the organisms to the gases.

Genetron-23 treatment, for example, increased the number of recessive lethal mutants and later generations of males treated with Genetron-23 had numerous melanotic tumors. Deviant phenotypes were noted with all the gas treatments, but it was not determined if they had a genetic origin.

The need for atmospheric controls of fluorinated hydrocarbons in the environment is suggested because of their potential carcinogenic and genetic hazard.

Garrett, Shirley and Fuerst, Robert
SEX-LINKED MUTATIONS IN *DROSOPHILA* AFTER EXPOSURE TO VARIOUS MIXTURES OF
GAS ATMOSPHERES
Env. Res. 7 (3): 286-93 (June 1974)

Tests were conducted on *Drosophila melanogaster*, using the Base technique of Muller and Oster, to determine the mutagenic effects of six gases: Genetron-23, Genetron-152A, nitrous oxides, perfluorobutene-2, sulfur-chloride-pentafluoride, and methyl mercaptan. All six gases were mutagenic but the last two were more toxic than desired for the study. When perfluorobutene-2 was studied in mixtures with compressed air and oxygen, nitrogen, or carbon dioxide, the mutation rate increased in proportion to the amount of perfluorobutene-2 in the mixture. The highest recessive mutation rate, 1.78 ± 0.02 , was obtained with perfluorobutene-2.

Anon

AEROSOLS UP 2.8% in '73, CSMA TOLD
Soap/Cosmetics/Chem. Spec. 50 (7): 27-32 (1974)

Output estimated at 2,902,000,000 units, a gain from 2,823,191,000 for 1972, 60th midyear meeting of Chemical Specialties Manufacturers Association hears. Attendance of close to 1200 reflected in well-attended sessions.

A tabulation of the estimated and actual units of non-food and food products filled by 110 U.S. companies provides a good review of the types of products packaged.

The current status of fluorescent whiteners for laundry products was reported on by John Liska of Ciba-Geigy Corp., Greensboro, N.C.

Anon

THIS IS THE WAY THE WORLD ENDS
Env. 16 (7): 25 (Sept. 1974)

According to F.S. Rowland and M.J. Molina of the University of California, freons (chlorofluoromethanes), the propellants used in most aerosol formulations, release chlorine in the stratosphere, leading to the destruction of ozone. Although they estimate the effects may not be noted for at least 50 years, if the ozone layer 20 to 30 miles above the earth is destroyed, the earth's surface would be exposed to ultraviolet radiation, which is lethal to some life forms. Additionally, N.E. Hester et al have reported a buildup of freons in Los Angeles basin air, but indicate the freons are very stable.

Thompson, Emmanuel B. and Harris, Willard S.
TIME COURSE OF EPINEPHRINE-INDUCED ARRHYTHMIAS IN CATS EXPOSED TO DICHLORO-
DIFLUOROMETHANE
Toxicol. Appl. Pharmacol. 29: 242-8 (Aug. 1974)

Fluorocarbon aerosol propellants inhaled in high concentrations have caused healthy humans to die and have sensitized dogs to epinephrine-evoked ventricular tachyarrhythmias. Whether or not catecholamine-evoked ventricular tachyarrhythmias contribute to fluorocarbon deaths, sensitization to the arrhythmogenic effects of injected epinephrine may be a means of measuring fluorocarbon-caused cardiac cellular effects. In this study, cats were injected with epinephrine before and from 3 to 10 minutes after inhaling dichlorodifluoromethane (as a mixture of 37% dichlorodifluoromethane, 21% oxygen, and 42% nitrogen) for 4 minutes. Epinephrine-evoked ventricular tachyarrhythmias were noted only after dichlorodifluoromethane inhalation. The incidence of the epinephrine-evoked ventricular tachyarrhythmias varied inversely with time after fluorocarbon inhalation stopped and sometimes persisted for 10 minutes after.

Barratt, R.S. Belcher, R. et al
ANAESTHETIC VAPOUR POLLUTION IN OPERATING THEATRE ATMOSPHERES
Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 205)

Evidence is accumulating to suggest potential occupational hazards to operating theatre personnel who are subject to prolonged exposure to inhalational anaesthetic agents. The reported effects of chronic exposure to these volatile organic compounds include an increased incidence of spontaneous abortion among anaesthetists and nurses, while the possibility that certain of these agents may be carcinogenic, teratogenic or mutagenic has been suggested. The published figures for levels of halothane in theatre air give a useful indication of the extent of the pollution, but numerous observers have expressed the desirability of a more extensive investigation of the problem together with more reliable data. This paper describes part of a comprehensive investigation to examine the exposure of theatre staff to pollution on operating theatre atmospheres by halothane, trichloroethylene and methoxyflurane vapours. The fundamental experimental techniques which are essential for meaningful analytical data will be discussed and typical results indicating the distribution of the anaesthetic agents throughout the operating theatre will be presented.

Anon

RESEARCH PROJECTS ON THE ENVIRONMENTAL EFFECTS OF FLUOROCARBONS

Chem. Eng. News 52 (35): 15 (Sept. 2, 1974)

The Manufacturing Chemists Association will extend its studies on the environmental effects of fluorocarbons and will include studies on their stratospheric effects. Previous studies indicate no chemical changes in common fluorocarbons in the lower atmosphere and no harmful environmental effects.

Tomatis, L.

THE CARCINOGENIC RISK FOR MAN OF ENVIRONMENTAL CHEMICALS

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 157)

The hypothesis that environmental factors play an essential role in the aetiology of human cancer is receiving wide support and it has been repeatedly asserted that over 80% of human cancers are due to environmental factors. Environmental factors may act directly on individuals exposed and may affect pregnant women and therefore reveal an effect on a subsequent generation.

A direct effect of environmental factors in producing cancer in man has shown by: (1) the unequivocal evidence of the chemical origin of occupational cancer, as in the cases of urinary bladder tumours in workers exposed to aromatic amines, lung cancers in workers exposed to bis(chloromethyl)ether, etc.; (2) the well-documented cases of iatrogenic cancers; (3) the positive correlation between cigarette smoking and lung cancer; (4) the different cancer incidences in urban and rural populations and the possible role of air pollution; and (5) the results of studies on migrants showing that for some cancers migrants acquire incidences similar to those of the host countries. Results obtained in experimental carcinogenesis are in keeping with a direct carcinogenic effect of chemicals. The evidence that exposure of pregnant women to a carcinogen may result in an increased risk of cancer in the progeny has been provided by the reports on the incidences of vaginal cancer in daughters of women exposed to stilboestrol during pregnancy. The role of prenatal exposure in determining cancer risks in the progeny is fully documented in experimental carcinogenesis. The possibilities of removing or preventing carcinogenic hazards to man in the environment will be discussed.

HALOETHERS

See: 2-0022, Fluorocarbons

Stonard, Michael D. and Nenov, Peter Z.
EFFECT OF HEXACHLOROBENZENE ON HEPATIC MICROSOMAL ENZYMES IN THE RAT
Biochem. Pharm. 23 (15): 2175-83 (1 Aug. 1974)

In rats fed hexachlorobenzene (HCB) for 7 days there was a sharp increase in hepatic cytochrome P-450 levels, an enhancement of in vitro microsomal oxidations and a lessening of the pharmacological actions of hexobarbitone in vivo. In chronic feeding of HCB, concentration of cytochrome P-450 remains elevated. Apparently, HCB resembles phenobarbitone as an inducer but differs somewhat in microsomal enzyme induction.

Anon

A NEW COMMERCIAL ROUTE TO HYDRAZINE

Chem. Eng. News 52 (35): 15 (Sept. 2, 1974)

Produits Chimiques Ugine Kuhlmann, Lyons, France, has developed a new commercial process for the manufacture of hydrazine by reacting ammonia, hydrogen peroxide, and a ketone in the presence of an amide or phosphate. Elimination of hypochlorite oxidizing agent precludes sodium chloride by-product. The company expects to have a semicommercial unit operative in 1975.

Neff, J.E. and Ketcham, N.H.

A DETECTOR TUBE FOR THE ANALYSIS OF METHYL ISOCYANATE IN AIR OR NITROGEN PURGE GAS

Am. Ind. Hyg. Assoc. J. 35 (8): 468-75 (1974)

The described detector tube can detect methyl isocyanate down to 1 ppm by volume and is useful for determining methyl isocyanate levels in vessels before they are opened for inspection. The reaction of the chemical with *p*-aminoazobenzene impregnated on silica gel causes the color to change from orange to yellow. Use of a battery-operated wire coil gives needed heat for an immediate reaction. The detector tube might make it possible to differentiate aliphatic and aromatic isocyanates.

In the testing of other chemicals, the color change of the *p*-aminoazobenzene detector tube with toluenediisocyanate at an approximate concentration of 13,000 ppm (by volume, at 25°C and 750-mm pressure) was orange to yellow. When vapors from a bottle of concentrated HCl are aspirated through the detector tube previously exposed to MeNCO, phenyl isocyanate, and toluene diisocyanate (TDI), the following color changes are observed: the tube exposed to MeNCO turns from yellow to the red-dish-orange color obtained with HCl and unreacted *p*-aminoazobenzene. The tubes exposed to phenyl isocyanate and the TDI turn a violet color over the yellow(reacted) area, while the orange unreacted section gives the reddish orange observed with HCl plus the indicator. This could possibly be used as a test to distinguish between aliphatic and aromatic isocyanates.

LIQUEFACTION AND GASIFICATION OF COAL

Anon

SNG-FROM-COAL STUDY VIEWS 1990 MARKETS

Chem. Eng. News 52 (34):18 (Aug. 26, 1974)

A 146-page market research study, covering a number of equipment and utilities markets, is available from Frost & Sullivan, Inc., New York City. Lurgi technology will probably be the first commercialized. SNG production will reach about 1.6 trillion cu ft/yr by 1990, the output from approximately 20 plants. Capital expenditures and other costs are discussed.

LIQUEFACTION AND GASIFICATION OF COAL

Anon

NEW REGULATIONS FOR AIR QUALITY PROPOSED

Chem. Eng. News 52 (35): 13-4 (Sept. 2, 1974)

EPA offers proposed regulations that may help clarify the 1970 Clean Air Act and would give the states the task of determining the amount of air quality deterioration, if any, allowed within their borders, under three classifications. Class II permits a moderate amount of industrial development, if new facilities use the best technology available for pollution control. Included under new facilities are "typical" coal gasification facilities and oil shale processing facilities.

Canton, H. and Greve, P.

LABORATORY MODEL SYSTEMS FOR THE STUDY OF THE ACCUMULATION OF CHEMICALS IN THE AQUATIC FOOD CHAIN

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 92)

Accumulation of persistent chemicals in the food chain is an important factor in the evaluation of potential hazards to men caused by the presence of such chemicals in the environment. In order to efficiently study this accumulation, model systems on laboratory scale must be developed which give indications on the accumulating properties of a given chemical, so that - with due precautions - an estimate can be made of the consequences if that chemical - deliberately or not - is allowed to come into the environment.

In the contribution submitted, two relatively simple model systems, one for fresh water and one for salt water, will be described. In each system a phytoplankton - a zooplankton - and a fish species is included. The performance of the systems will be illustrated by experiments with α -hexachlorocyclohexane, which compound is an important contaminant of many Dutch surface waters.

Marcus, Allan H.

BODY BURDEN OF POLLUTANTS: COMPARTMENTAL STOCHASTIC MODELS

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 94)

For the transport of trace pollutants and radioactive tracers through the body, a physiologically plausible model (random walk with drift) is proposed by which a single four-parameter compound Poisson process for residence time of a molecule in a compartment can fit all of the observed types of specific activity curves. The parameters have a direct interpretation as constants of an age-dependent molecular exchange rate between compartments. Complex system dynamics can be modeled as a Markov renewal process. The carboxyhemoglobin levels in blood due to carbon monoxide exposure, for example, appear to require at least a two-compartment model. This model is appropriate for evaluation of physiological response to random environmental stress since the response can be represented as a linear stochastic integral in which the specific activity function "filters" the pollutant dosage. Community air pollution can usually be modeled as a log-normal random process. Occupational and personal doses require a point process description such as a Markov renewal process, hence the physiological response is a generalization of "shot noise." Applications include: trace metal toxicology; carboxyhemoglobin level; threshold effects; setting health standards.

Aubert, M. and Donnier, B.

EXPERIMENTAL MARINE TROPHODYNAMIC CHAINS: METHOD OF STUDYING THE PATHOLOGICAL EFFECTS OF CHEMICAL POLLUTION

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 181)

The danger of chemical pollution of the sea results from the concentration capacity of certain pollutants in marine species. This fact can give rise to high concentrations of these frequently toxic substances, chiefly in the last links in the biological chains, which are usually those consumed. Described is an original method by which marine trophodynamic chains, representing the main biocoenoses, are recreated in the laboratory and exposed for varying periods and in progressive concentrations to the pollutants under consideration. The results are obtained by evaluating the biological behaviour and chemical impregnation of their components.

This systematically employed methodology makes it possible (via the same biological chain) to conduct research on toxicity levels, on the effects of the biological decomposition of a pollutant, and on the transfer and concentration of toxic substances. The results make it possible to assess the risks involved in human consumption of sea-food and thus the possible dangers to public health.

Del Borghi, M., Fumarola, G. et al

STUDY AND ASSESSMENT OF THE EFFECTS OF ENVIRONMENTAL POLLUTION ON HUMAN HEALTH BY SIMULATION USING MECHANICAL BIOCHEMICAL MODELS

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 210)

A mechanical biochemical model, designed to provide physical and mathematical correlations of exposure and effect, to assess the impact of environmental pollution on human health, is based on the familiar analytical techniques successfully tested in studies on distribution, effects and acceptable levels of drugs in the human body, and is in the form of one or more biochemical reactors in parallel series.

The model is designed to provide simultaneous measurements of the most important parameters indicating suspected or observed effects of pollution on human health, such as pollutant concentration, duration of exposure, and intrinsic characteristics of the exposed subject, relating these to the type of vehicle (atmosphere, water, food, noise), for each type of pollutant. Faster working than older epidemiological and statistical methods, it provides an excellent means of interpreting physiological and behavioral changes in man from pollutants; of monitoring and making significant estimates of the synergic, antagonistic and cumulative effects, both short and long-term, of various pollutants.

Brudey, S.E., Perry, R. et al
THE COMPOSITION OF RESIDUES FROM MUNICIPAL REFUSE INCINERATORS
Env. Res. 7 (3): 294-302 (June 1974)

Organic materials in the ash from municipal refuse incinerators were extracted and identified with particular attention being paid to the analysis of incomplete combustion products, e.g., aromatic polynuclear hydrocarbons. Gas-liquid chromatography/mass spectrometry, X-ray fluorescence and stereoscan studies were among the techniques used.

A two dimensional thin layer chromatogram shows major components, including phenyl α -naphthylamine.

OPTICAL BRIGHTENERS

See: 2-0019, Fluorocarbons

BETA-PROPIOLACTONE

See: 2-0015, Ethyleneimine

Singh, A.R., Lawrence, W.H. et al
MUTAGENIC AND ANTIFERTILITY SENSITIVITIES OF MICE TO DI-2-ETHYLHEXYL PHTHALATE
(DEHP) AND DIMETHOXYETHYL PHTHALATE (DMEP)
Toxicol. And Appl. Pharmacol. 29 (1): 35-46 (July 1974)

Male mice injected with DEHP or DMEP of lesser toxicity than the acute LD50 dose were mated with untreated virgin females in which both phthalates at high doses caused a definite reduction in pregnancies to a lesser extent. Antifertility effects were more persistent with DEHP than with DMEP during the 12-week study. Dose- and time-dependent antifertility and mutagenic effects were noted for the two phthalates. Early fetal deaths and semisterility were among the adverse reproductive and/or genetic effects noted.

Rubin, R.J. and Schulz C.O.
RELATION OF THE PHYSICAL/CHEMICAL STATE OF A PLASTICIZER, DI(2-ETHYLHEXYL)
PHTHALATE (DEHP) TO ITS BIOLOGICAL DISPOSITION AND ACTION.
Abstract of paper presented at "Recent Advances in the Assessment of the Health
Effects of Environmental Pollution," an International Symposium sponsored by
Commission of the European Communities, U.S. Environmental Protection Agency,
and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 80)

Some 1 billion pounds/yr of phthalate ester plasticizers are produced in the U.S. Because of the widespread environmental distribution of these esters, there is growing concern about their potential toxicological hazards. Three different preparations of DEHP, the most widely used phthalate, were studied to determine the disposition and biological effects of this compound administered in different physical states by various routes. These were: 1) a sonicated aqueous emulsion (completely opaque); 2) a detergent-dispersed preparation (opalescent); and 3) a detergent-solubilized preparation (completely transparent).

Varying results on the rate of disappearance in the blood, accumulation in body organs, production of marked pulmonary edema following i.v. admn. of prepn. 3, and the killing by asphyxiation of 50% of the rats by 300 mg/kg of the same prepn., indicates more knowledge of physical state of DEHP needed to evaluate its toxicologic potential.

Silverman, A.P. and Williams, Helen

BEHAVIOUR OF RATS AND THE THRESHOLD LIMIT VALUE OF TRICHLOROETHYLENE

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 179)

Social behavior was observed in groups of 16 male rats exposed singly to varying levels of TCE vapor (200, 500, or 1000 ppm for 5x6 (sic) hours/wk for about 5 weeks (12 weeks at 100 ppm). Control rats showed highest spontaneous activity on return to home cage after daily separation; TCE reduced this activity. At 1000 ppm, fall in activity due to TCE was significant after 1 day. At 100 ppm, activity fell after 1 day in one group of rats; after 1 1/2 weeks in another group; and after 8 1/2 weeks in a third. In unfamiliar cages, thirsty rats exposed to TCE found water and began drinking quicker than controls. Present TLV for TCE in Britain is not at a no-effect level.

TRICHLOROETHYLENE

See: 2-0022, Fluorocarbons

SHALE OIL EXTRACTION AND REFINEMENT

Anon

OIL SHALE

Env. Rept. 5 (8): 64 (1974)

The Quarterly of the Colorado School of Mines, Vol. 69, No. 2, contains the 19 papers on the state-of-the-art of oil shale mining and production, which were presented at the Seventh Oil Shale Symposium, 18-19 April, 1974. Available from the Colorado School of Mines, Golden, Colorado 80401; price, \$6.

SHALE OIL

See: 2-0029, Liquefaction and gasification of coal

Maltoni, Cesare and Lefemine Giuseppe
CARCINOGENICITY BIOASSAYS OF VINYL CHLORIDE 1. RESEARCH PLAN AND EARLY RESULTS
Env. Res. 7 (3): 387-405 (June 1974)

The possibility of tumor formation in experimental animals from exposure to vinyl chloride is under study with consideration for such parameters as route of administration, dosage, treatment duration, species, strain, and age of animals.

When rats inhaled high concentrations (250 to 10,000 ppm) of VC, they developed Zymbal gland carcinomas, nephroblastomas, liver angiosarcomas, and other effects. Under the same conditions, mice developed pulmonary adenomas, breast cancers, and liver angiosarcomas. Results indicate a direct relationship between dose and length of treatment and neoplastic response.

Anon
TOUGH WEEK FOR VINYL CHLORIDE
Chem. Wk. 115 (9): 13-4 (Aug. 28, 1974)

Senate Commerce Committee Subcommittee on the Environment probably will use new data presented on vinyl chloride toxicity at its recent hearings to press for quick agreement with the House on a toxic substances act.

I.J. Sekiloff, Mt. Sinai School of Medicine, testified to potential mutagenicity of VC; J. Wagoner, NIOSH, mentioned that deaths from liver cancer among 109 VC workers, who died in 1950-1973, was "2 times the number expected." Recently, 248 Ohio meat wrappers initiated a class action suit vs. Goodyear Tire & Rubber and Borden, charging physical injury to packers from VC reportedly released during meat-wrapping.

2-0041
VINYL CHLORIDE
(Manufacturing)

Anon

A VOTE FOR PVC

Chem. Wk. 115 (9): 15 (Aug. 28, 1974)

Firestone Plastics is building a new dispersion-grade polyvinyl chloride resins plant near its PVC installation, Perryville, Md. Scheduled for mid-1975 completion, unit will help boost PVC capacity from 400 million to 450 million lb/yr. Plant may not meet no-detectable level standard; "is being engineered to keep the exposure level as low as is technologically possible."

2-0042
VINYL CHLORIDE

Anon

VINYL CHLORIDE

Environ. 16 (7): 27 (Sept. 1974)

EPA may limit vinyl chloride to 50 ppm in the air outside chemical plants, but the Labor Department is arguing for zero levels inside plants. Unions agree with the Labor Department proposal; industry is resisting.

Two people have died from liver cancer traced to vinyl chloride from polyvinyl chloride plants in their neighborhoods. EPA, however, sees no "imminent hazard" to those living near vinyl chloride plants.

GENERAL INFORMATION

Mendell, J.R. et al

TOXIC POLYNEUROPATHY PRODUCED BY METHYL N-BUTYL KETONE

Science 185 (4153): 787-9 (30 August 1974)

Seventy-nine out of 1161 workers at a plant producing plastic-coated and color-printed fabrics showed evidence of polyneuropathy, probably due to the effects of N-butyl ketone (MBK), which is used as a dye solvent and cleaning agent.

Chickens, rats, and cats exposed to 200 to 600 ppm of MBK continuously for 7 days per week developed a peripheral neuropathy.

It is suggested that the recommended threshold limit value of 100 ppm of MBK be reviewed and that safe atmospheric levels of MBK be established.

GENERAL INFORMATION

Anderson, J.W. and Neff, J.M.

ACCUMULATION AND RELEASE OF PETROLEUM HYDROCARBONS BY EDIBLE MARINE ANIMALS

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 69)

Man's health may be endangered from pollution of the marine environment by petroleum and petroleum hydrocarbons. Marine organisms tend to accumulate petroleum hydrocarbons and retain them in their tissues but this potential health hazard to those who eat marine fish and shellfish has not yet been assessed. Studies were made on the patterns of uptake and retention of potentially toxic and/or carcinogenic petroleum hc's by several species of marine crustacea molluscs and fish, using two crude oils and two refined oils.

Higher concentrations in sea water mixtures of di- and tri-aromatic hc's resulted from the refined oils. Naphthalenes, as a group, were accumulated to the greatest extent by all marine animals. Complete release of petroleum hc's occurred in from one to 52 days, the rate being species dependent. A simple spectrophotometric method was devised to measure naphthalene and alkyl naphthalenes quantitatively in marine animal tissues. Results discussed in relation to hazards to human health.

Anon
CANCER/WOODWORKING LINK?
Env. Rept. 5 (9): 67 (Sept. 4, 1974)

A study of the 1969-1971 death records of members of the Carpenters and Joiners union showed excessive leukemia-lymphoma group cancers in millwrights, millmen, lumber workers, sawmill workers, and cabinet makers. A high percentage of lung and stomach cancers were noted among construction workers, particularly in major urban areas. According to Dr. S. Milham, Jr., State Dept. of Social and Health Services, who conducted the study, the results confirm the suspicion that wood contains cancer-causing agents.

An off-shoot of the study was the finding of excess lung cancer mortality among acoustical tile workers, probably traceable to asbestos exposure.

Hook, E.P. et al
A SEARCH FOR CHROMOSOMAL BREAKAGE IN INDIVIDUALS EXPOSED TO SPRAY ADHESIVES
Paper presented at The American Environmental Mutagen Society, Fourth Annual Meeting, March 8-11, 1974, Washington, D.C.

In August and September 1973, the Consumer Product Safety Commission reported a 5- to 6-fold increase in the rate of cells with chromosomal damage in persons exposed to spray adhesives in Oklahoma City. This paper tells of a double-blind study of "exposed" individuals and matched controls by the Birth Defects Inst., Albany, N.Y., following the CPSC report. A first study was made on 36 metaphases from PHA(phytohemagglutinin)-stimulated peripheral blood of 22 subjects. Should the expected control rate of about 1.2% have been found in both groups then this would have excluded with 95% confidence a doubling or greater rate in the exposed compared to the controls. When the code was broken, a rate of 3/398 cells (0.8%) with evidence for breakage was found in the controls, and 7/397 (1.76%) in the exposed, a "non-significant" difference ($\chi^2=0.92$) which in fact excludes with 95% confidence a rate in the exposed of five times or greater than in the controls. The study was done over a 2-week period.
[Abstr. in: Mutation Res. 26 (5) 457 (Oct. 1974)]

Vorsenger, Gary and Hirschhorn, K.
ABSENCE OF INCREASED CHROMOSOME ABERRATIONS DUE TO AEROSOL SPRAY ADHESIVES
Paper presented at The American Environmental Mutagen Society, Fourth Annual Meeting, March 8-11, 1974, Washington, D.C.

A recent report indicated that multiple birth defects might arise from the use of foil art spray adhesives (two abnormal infants born to parents who had 1) used adhesive spray before and during pregnancy, and 2) only before conception).

However, a correlation of spray adhesives sales data and multiple birth defects in two areas polled showed that an increase in sales of spray adhesives was not accompanied by an increase in birth defects. Another study on the chromosomal effect, using peripheral blood from patients and controls, also showed no difference in the rate of chromosome aberrations between subjects and controls. Now underway is a study of spray adhesives in the system, *DROSOPHILA MELANOGASTER*. [Abstr. in: Mutation Res. 26 (5), 457-8 (Oct. 1974)]

Kaiser, Klaus L.E.
MIREX: AN UNRECOGNIZED CONTAMINANT OF FISHES FROM LAKE ONTARIO
Science 185 (4150): 523-5 (9 August 1974)

The finding of mirex in fish samples from the Bay of Quinte, Lake Ontario, Canada, far from any possible area of its field application, raises the question of its source. Apparently, analytical techniques have not allowed for a differentiation between mirex and PCB's, and mirex may have been improperly identified as a PCB isomer. Mirex, also called Dechlorane, is a perchlorinated hydrocarbon, C₁₀Cl₁₂, which may be a widespread environmental contaminant with high geochemical stability.

Omenn, Gilbert S.

"ECO-GENETICS": HOST VARIABILITY IN HEALTH EFFECTS OF ENVIRONMENTAL AGENTS
Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 170)

The genetically-determined variation in enzymes, cell surfaces, and immune responses of the host plays an important role in assessing the effects of environmental agents upon living things. For example, variation in enzymes of the DNA repair mechanism may be greatly influence mutagenic effects. The action of the host on the agent may give rise to different vulnerabilities. Therefore, certain individuals may run higher risks for mutagenic and other effects of common agents not considered harmful in over-all epidemiological investigations. Practical screening methods may be developed to recognize individuals at much higher than "normal" or "acceptable" risk to specific agents in defined occupational or geographic environments.

Capurro, P.U.

ASSESSMENT OF THE HEALTH EFFECTS CAUSED BY CHRONIC EXPOSURE TO SOLVENTS
Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 174)

More than 100 people, exposed to solvents of different types, were studied. Most of them were exposed to air pollution caused by a chemical plant that recovers solvents from discarded chemicals and others working for industry. The air and the water in the area of the chemical plant were studied with gas chromatography and mass spectrometry for more than 2,000 hours. Distribution of chemical vapors in the atmosphere was studied. The effects on the people were studied especially with insulin immunoassay, glucose tolerance, liver scan, pancreas scan and lung scan. With these methods, the organ most damaged was found to be the pancreas, followed by the lung and liver. Kidney damage was also noted. Many people, including children, complained of pain in the extremities. A strong suggestion of increased rate of malignancies was found in the area where the chemical plant was present, such as two carcinoma of the pancreas. The youngest patient with carcinoma of the pancreas was a 21 year old man. There were two cases of carcinoma of the larynx and four cases of malignancy of the blood-forming organs. Zinc blood levels and zinc urinary excretion studies were done and changes found.

Cicolella, A. et al

EXAMPLE OF ATMOSPHERIC RESEARCH ON A CHEMICAL SUBSTANCE GIVING RISE TO PATHOLOGICAL EFFECTS

Abstract of paper presented at "Recent Advances in the Assessment of the Health Effects of Environmental Pollution," an International Symposium sponsored by Commission of the European Communities, U.S. Environmental Protection Agency, and World Health Organization, Paris, 24 to 28 June 1974. (Abstr. No. 189)

An abnormally high number of blood count inversions detected in employees of a French firm could not be traced to any definite cause. Suspect, however, was α -phenylindole. Pharmacological, hematological and other tests were made on rabbits (inhalation) and on mice and rats (oral and i.p. administration). Examination of the action of this compound on the metabolism of the naturally-occurring indole derivative showed disturbance of the tryptophane metabolism, with urinary elimination of hippuric acid and 5-hydroxy-indoles. In follow-up tests on about 500 workers, the same reaction was noted. The method is recommended for evaluating health effects of pollutants in the work environment.

Anon

GENETICAL HAZARDS OF POLLUTANTS

Nature 250 (5467): 537 (Aug. 16, 1974)

Eight speakers at a Genetical Society symposium, Lancaster, England, July 10-12, 1974, discussed current knowledge on the genetical effects of pollution. These effects are divided into: selection and mutation. Much is known about the selective effects of pollutants, e.g., heavy metal tolerance in plants, but less is known of the more complex mutational aspects of pollution. Peripheral blood lymphocytes provide a means of testing the effects of new chemicals on human tissue, but other effective methods are urgently required.

Anon
MEDICAL EQUIPMENT
Environ. 16 (7): 28 (Sept. 1974)

Ethylene oxide, a fumigant widely used in sterilizing medical equipment and some foods, may be a potential health hazard. Herbert Rosenkrantz, Columbia University, reports that the volatile ethylene oxide, when used, forms nonvolatile ethylene chloride. Evidently, the chloride by reacting with DNA is a possible mutagen and carcinogen.

Anon
RAW MATERIALS DATA HANDBOOK
J. Paint Technol. 46 (595): 80 (Aug. 1974)

Sponsored by the National Association of Printing Ink Manufacturers, the National Printing Ink Research Institute has published volume one of Raw Materials Data Handbook. The 123 separate data sheets, designed to aid in establishing preventive industrial safety techniques by providing physical properties and hazards data on organic solvents used in the ink industry, will be followed by other volumes covering all raw materials used by the industry.

2-0055

GENERAL INFORMATION

Anon

A HIGH PERCENTAGE OF ATMOSPHERIC OZONE COULD BE DESTROYED

Chem. Eng. 52 (34): 16 (August 26, 1974)

Exhaust gases from an international fleet of supersonic transports could deplete much of the atmosphere's ozone, according to scientists at MIT. By establishing a worldwide maximum SST emission level of nitrogen oxides, probably 0.1 megaton/year, ozone loss could be kept under 1%.

2-0056

GENERAL INFORMATION

Anon

WHAT CAUSED A "MYSTERIOUS ILLNESS" AT A MEN'S APPAREL PLANT?

Chem. Eng. 81 (17): 39 (August 19, 1974)

Employees of Munsingwear, a men's apparel plant in Hominy, Okla., developed symptoms of organo-phosphate poisoning -- headaches, nausea, dizziness, muscle cramps, and lower limb weakness -- when they returned to work after a vacation. A total of 130 became ill, with 15 hospitalized. A pesticide used against insects in the cafeteria was ruled out as a possible cause. Suspect now are fumes from polymers used as package sealants, but tests will continue to try to find the actual cause.

Anon
EFFECTS OF FLOATING OIL CONTAMINANTS (TAR BALLS)
Chem. Eng. News 52 (34): 16 (August 26, 1974)

Under contract to the American Petroleum Institute, the Bermuda Biological Station for Research will investigate the effects of floating oil contaminants on shoreline plants and animals. The study will take place in Bermuda, where tar balls are prevalent.

2-0058
REGULATIONS AND STANDARDS

Anon

COMPLIANCE SAMPLING MANUAL, AS DRAFTED JANUARY 1972; REVISED March 1, 1973
Prepared by Technical Programs, Texas State Department of Health Air Pollution
Control Services. Texas Air Control Board, 8520 Shoal Creek Boulevard,
Austin, Texas 78758

Describes the techniques and procedures used by the staff of the Texas Air Control Board for the measurement and analysis of common air contaminants.

2-0059
REGULATIONS AND STANDARDS

Segesser, Ernest R.

PRELIMINARY DRAFT OF THE NEW JERSEY STATE WATER POLLUTION CONTROL PROGRAM PLAN
FOR FISCAL YEAR 1974-75

Division of Water Resources, Department of Environmental Protection, State of
New Jersey, P.O. Box 1390, Trenton, N.J. 08625

This document incorporates the State strategy statement, the construction priority list, permit priority lists, municipal and industrial discharge lists, and planned outputs.

Anon

CONNECTICUT REPEALS PHOSPHATE BAN
HAPPI 11 (7): 7 (1974)

On the recommendation of the Connecticut Dept. of Environmental Protection, the state's legislature voted in May to repeal the 1973 state law banning the sale of phosphate-based detergents in Connecticut after 30 June.

Although detergent sales will now go back to the 8.7% limit on phosphates by weight, effective since 1972, a new ruling requires the marketer to file a statement with the DEP listing chemical and common names of all active ingredients or to label his packages with the percentage of phosphate by weight. The DEP can also ban or restrict detergent sales or use in any locality to protect the state's waters.

REGULATIONS AND STANDARDS

See: 2-0001, Arsenic
2-0016, Ethylenimine
2-0029, Liquefaction and gasification of coal

Jaeger, R.J. et al
TOXICITY AND BIOCHEMICAL CHANGES IN RATS AFTER INHALATION EXPOSURE TO
1,1-DICHLOROETHYLENE, BROMOBENZENE, STYRENE, ACRYLONITRILE OR 2-CHLOROBUTADIENE
Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Because earlier experiments indicated that inhalation of the plastics monomer, 1,1-dichloroethylene, was toxic to rats, other plastics monomers were tested. Acrylonitrile (ACNO, styrene (S), and 2-chlorobutadiene (CBD) depleted hepatic glutathione. Neither S nor ACN caused liver damage, but S caused pulmonary irritation and edema. ACN did not harm fed rats but it was lethal to fasted rats at 275 ppm. Liver injury from CBD was noted; fasting increased its toxicity. Apparently, there are significant differences in inhalation toxicity testing based on fed-fasting. [Abstr. in: Toxicol. and Appl. Pharm. 29 (1): 81 (July 1974)]

Weinberg, Janet H.
TOXIC SURPRISES FROM THE PLASTICS INDUSTRY
Science News 106 (10): 154-5, 157 (Sept. 7, 1974)

The U.S. produces over 29 billion lb/yr of plastics; about 2.5 million workers produce them. A variety of chemicals go into the making of plastics including fillers like asbestos, clay, fiber glass; dialkyl phthalates or oleic esters for flexibility; titanium dioxide, chromium, organic dyes for color; plus stabilizers, antioxidants, ultraviolet absorbers, preservatives, lubricants, flame retardants and antistatic agents. Many of the chemicals involved in producing plastics are toxic to humans.

Acrylonitrile, used to make acrylon, produces bleeding and tissue damage to the adrenal cortex in rats; a related compound, propionitrile, causes duodenal ulcer. Toluene diisocyanate, used to make polyurethane, in a single exposure might cause respiratory symptoms. Two researchers have offered data on the lung carcinogenesis of chloromethyl-methyl ether, which is used as a crosslinking agent for polymer resins and which is laced with bis-chloromethyl ether, a known lung carcinogen in animals. Another chemical, 2-chloro-1,3-butadiene, like vinyl chloride, causes liver cancer.

In a discussion of the industry/Government "controversy" over exposure standards for toxic substances, mention is made of ethylfluoroacetate, a toxic compound, used as an intermediate in a cancer drug.

Anon
NEW POLYMERS ON THE WAY
Chem. Eng. 81 (18): 32, 34 (Sept. 2, 1974)

Materials shortages notwithstanding, many new polymers particularly for the aerospace industry, are under development. Spinoffs may find their way into industrial and commercial uses. Mentioned: cost still crimps widespread industrial use of reinforced plastics in which boron and graphite fibers are reinforcing agents. Cost of structural grade graphite fibers may go down to less than \$10/lb by substituting pitch for polyacrylonitrile as a precursor. Dielectric heating for rapid curing of reinforced plastics may also reduce cost; has been successfully demonstrated for boron-epoxy materials and other materials.

Environmental Protection Agency
HAZARDOUS SUBSTANCES. DESIGNATION OF AND DETERMINATION OF REMOVABILITY
Fed. Reg. 39 (164): 30466-71 (Aug. 22, 1974)

Acrylonitrile is one of several hundred materials listed in EPA's advance notice of a proposed rule that will lead to the creation of a new Part 116 of Title 40 of the Code of Federal Regulations. The substances listed are being considered for designation as hazardous when released into the aquatic environment in spill situations.

3-0005
ARSENIC

Munro, I.C. et al

BIOLOGICAL AVAILABILITY OF ARSENIC FROM FISH

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

To supplement the paucity of data on the bioavailability of arsenic to mammals, comparison studies were made on the excretion of arsenic and arsenic trioxide from fish. Pigs were fed a series of 4 single meals. With low arsenic fish serving as the control meal, the diets were high arsenic fish, arsenic trioxide, and arsenic trioxide with low arsenic fish, at 0.3 mg As/kg for each. Pre- and post-dosing urine and fecal collections showed that 80% of the arsenic was excreted in the urine and the remainder in the feces after administration of the high arsenic fish, with excretion virtually complete in 4 days. With arsenic trioxide, 80% of the arsenic was excreted in the urine during day 1, while 20% apparently was retained in the body. [Abstr. in: Toxicol. and Appl. Pharm.

29 (1): 111 (July 1974)]

3-0006
ARSENIC

Anon

A POSSIBLE LINK BETWEEN ARSENIC PROCESSING AND CANCER IS BEING STUDIED

Chem. Wk. 115 (10): 31 (Sept. 4, 1974)

With an estimated 1.5 million workers exposed to inorganic arsenic, OSHA is investigating the possibility that arsenic processing may cause cancer. According to Allied Chemical and Dow Chemical, mortality rates from lung and lymphatic cancers are excessively high among workers who processed inorganic arsenic. OSHA will hold hearings on 20 September 1974.

3-0007
ARSENIC
(Manufacturing)

Anon

AMERICAN SMELTING AND REFINING HAS STARTED PRODUCTION
Chem. Wk. 115 (10): 9 (Sept. 4, 1974)

American Smelting and Refining (Asarco), now producing metallic arsenic in Tacoma, Wash., estimates production of approximately 360,000 lbs/year of 99%-pure metallic arsenic. Asarco sees a 1.2 million lbs/year U.S. market for arsenic as an alloying ingredient; has priced its product at \$1.60/lb for 2,000 lbs or more, in 200-lb drums. Asarco's venture marks first commercial U.S. production of arsenic.

3-0008
ARSENIC
(Manufacturing)

Anon

ARSENIC: POISON TURNED CARCINOGEN
Science News 106 (10): 149 (Sept. 7, 1974)

Dow and Allied chemical companies submitted studies, released by the Government, which indicate that arsenic is carcinogenic in man. Dow reported that about one-third of 178 workers in its Midland, Mich., arsenic plant (closed since 1956) after being operated for 32 years) have died of cancer. According to Allied, 19 of 27 workers (Baltimore plant), who died during the last 13 years, died of cancer. Lung and lymphatic cancer rates were high in males. Allied's plant has changed its manufacturing process. Wm. Lloyd, OSHA, suggests a 0.05 mg standard should reduce the incidence of the disease.

Illinois Pollution Control Board
WATER POLLUTION REGULATIONS OF ILLINOIS

As part of the effluent standards of the State of Illinois, published pursuant to adoption through July 1973, a maximum concentration of 0.25 mg/l was set for arsenic.

3-0010
ARSENIC

Fulcher, Gordon
BOARD ORDER NO. 70-0828-5 (Aug. 28, 1970)
Texas Water Quality Board, 1108 Lavaca Street, Austin, Texas 78701

This order regulating the discharge of certain hazardous metals into or adjacent to the water in the state of Texas includes arsenic and boron. The maximum allowable concentration of each, stated in terms of milligrams/liter (mg/l) determined on the basis of a daily average, is:

<u>Metal</u>	<u>Inland Waters</u>	<u>Tidal Waters</u>
arsenic	0.05	1.0
boron	5.0	5.0

Goulden, P.D. and Brooksbank, P.
AUTOMATED ATOMIC ABSORPTION DETERMINATION OF ARSENIC, ANTIMONY, AND SELENIUM IN
NATURAL WATERS
Anal. Chem. 46 (11): 1431-6 (Sept. 1974)

Sub-microgram levels of antimony, arsenic, and selenium in natural waters can be detected with the described technique, which allows analysis of 40 samples/hour with a limit of detection of 0.1 $\mu\text{g}/\text{l}$ for arsenic and selenium and 0.5 $\mu\text{g}/\text{l}$ for antimony. Simultaneous determinations of arsenic and selenium on a large number of natural water samples were made, using a dual-channel spectrophotometer.

Anon
AEROSOLS IN SKY POSE DOWN-TO-EARTH THREAT?
Chem. Wk. 115 (12): 59 (Sept. 18, 1974)

Reported at the American Chemical Society's 168th meeting, Atlantic City, N.J., Sept. 1974: environmental hazard from the biological conversion of arsenic (in pesticides, wood preservatives, etc.) into toxic products that may accumulate in air, water, soil. According to D.P. Cox, Union Carbide, certain bacteria can transform nonvolatile arsenicals into highly toxic gaseous arsenic-containing compounds. Others reported conversion by microorganisms of water insoluble inorganic arsenicals into soluble organic arsenicals that can enter food chain, but de-emphasized "biomagnification" of arsenic compounds.

F.S. Rowland, University of California at Irvine sounded an alert to the possibility of increasing skin cancers and global change in climate from atmospheric accumulation of chlorofluoromethanes resulting from use of aerosol spray propellants and refrigeration coolants.

*3-0013
ASBESTOS

Carides, J.N.
DIFFERENTIAL BINDING (Letter to Editor)
Chem. Eng. News 52 (36): 3 (Sept. 9, 1974)

Writer comments on letter by C.A. Alson (C&EN, July 15, p.3) on possible role of asbestos as an absorptive medium in the lungs, suggesting that the asbestos fibers may act as a receiving, storing, and distributing agent of carcinogenic chemicals.

The writer proposes that some types of lung cancer, themselves, show surface properties different from those of normal tissue, and that these differences might be useful for early detection and/or therapy by direct differential binding of tracer-bearing molecules from the gaseous phase.

*3-0014
ASBESTOS

Environmental Pollution Agency
ASBESTOS MANUFACTURING POINT SOURCE CATEGORY
Fed. Reg. 39 (169): Part II, 31592-9 (Aug. 29, 1974)

Effluent limitations and guidelines for certain subcategories proposed by EPA on 26 Feb. 1974 are described.

*3-0015
ASBESTOS

Illinois Air Pollution Control Board
AIR POLLUTION CONTROL REGULATIONS
State of Illinois, Revised, Second Printing, January 1973 (Printed by Environmental Protection Agency)

Part VI, asbestos, states that the regulations are aimed at controlling the amount of asbestos fiber released into the environment from the major sources of emission in order to protect the public and to safeguard the health of future generations from continuous discharge of asbestos fiber, which can be toxic and tends to be cumulative both in the atmosphere and the human body.

In a later section, "Opinion of the Board on Adoption of Regulations (#R71-16; 23pp.), the properties and hazards of asbestos are spelled out in greater detail; storage, transport, and disposal methods are discussed.

*3-0016
ASBESTOS

New Mexico Environmental Improvement Board
AIR QUALITY CONTROL REGULATION (April 19, 1974)
State of New Mexico, Environmental Improvement Agency, P.O. Box 2348, Santa Fe, New Mexico 87501

Section Number 201 of the Ambient Air Quality Standards and Air Quality Control Regulations adopted by the New Mexico Health and Social Services Board on January 23, 1970, amended on June 26, 1971, and amended on June 16, 1973, was adopted April 19, 1974; effective June 2, 1974. The maximum concentration of asbestos permitted, if present in the total suspended particulate, is 0.01 ug/m³.

*3-0017
ASBESTOS

Lillington, G.A. et al
CONJUGAL MALIGNANT MESOTHELIOMA (Letter to Editor)
New Eng. J. Med. 291 (11): 583-4 (Sept. 12, 1974)

Malignant mesotheliomas in asbestos workers and 23 cases in (primarily) women who resided in the home of asbestos workers have been documented. This short report describes the case of a 49-year-old-man and his wife, who both died from malignant mesothelioma. He worked with asbestos; she washed his dusty clothing.

*3-0018
ASBESTOS

Cook, Philip, M. et al
ASBESTIFORM AMPHIBOLE MINERALS: DETECTION AND MEASUREMENT OF HIGH CONCENTRATIONS
IN MUNICIPAL WATER SUPPLIES
Science 185 (4154): 853-5 (Sept. 6, 1974)

Municipal water supplies from western Lake Superior water contain significant amounts of asbestiform amphibole minerals. X-ray diffraction shows the total concentration of amphibole minerals in Duluth, Minn., water supply to average 0.19 mg/l/ Electron microscopy shows the presence of asbestiform amphibole fibers, which are apparently a human health hazard.

ASBESTOS

SEE: 3-0002, Acrylonitrile

BORON

SEE: 3-0003, Acrylonitrile
3-0010, Arsenic

3-0019
DIOXANE

Kociba, R.J. et al

1,4-DIOXANE TOXICITY AS DETERMINED BY A TWO-YEAR DOSE-RESPONSE STUDY IN RATS
Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Rats maintained for up to 716 days on drinking water containing 1.0% of 1,4-dioxane showed decreases in body weight gains, survival rates, and water consumption, plus hepatocellular and renal tubular degenerative changes, and nasal carcinomas. At 0.1%, rats experienced some renal and hepatic degenerative changes but no apparently dioxane-related tumors. There was no evidence of tumor formation or other evidences of toxicity in rats receiving 0.01% dioxane. A dose-response for the toxicity of dioxane is assumed. Under recommended conditions of use, dioxane should not cause any ill effects. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 86 (July 1974)]

3-0020
DIOXANE

Torkelson, T.R. et al

LACK OF MANIFESTATION OF TOXICITY IN RATS INHALING 111 PPM 1,4-DIOXANE FOR TWO YEARS

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Rats inhaling an average concentration of 111 ppm (0.4 mg/l) of 1,4-dioxane vapors for 7 hours/day, 5 days/week for 2 years showed no detectable changes in demeanor, growth, or mortality rate. Hematological changes were not unlike those of the control animals. No lesions of major organs and tissues, and no hepatic or nasal carcinomas were found. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 86 (July 1974)]

Murphy, James, P.F. et al

EFFECT OF DIBROMOTRIFLUOROETHANE INHALATION ON HEPATIC DRUG METABOLISM

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Mice, who inhaled dibromotrifluoroethane at concentrations of 0.10 to 0.63% for 5 hr/day, for 3 days, experienced an almost 2-fold reduction in hexobarbital sleeping time. Apparently, the compound induced hepatic drug metabolizing enzymes. The tested fluoroalkane is under consideration by the U.S.A.F. as a possible fire control agent. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 80-1 (July 1974)]

Griffin, T.B. et al

CONTINUOUS EXPOSURE OF RATS TO HEXAFLUOROETHANE

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Reported studies of rats exposed for 23 hours/day to hexafluoroethane (Freon 116) confirm the theory that F-116 is inert. Under the test conditions, there were no apparent effects on the liver or lungs of the rats and growth was similar to that of the control animals. Hexafluoroethane is under consideration as an atmospheric inerting agent for fighting combustion in spacecraft, aircraft, and submarines. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): (July 1974)]

Anon

USE OF RADIATION INSTEAD OF HEAT FOR DYEING AND FINISHING OF TEXTILES
Chem. Eng. News 52 (36): 12 (Sept. 9, 1974)

Under a grant from NSF, North Carolina State University's school of textiles is investigating using radiation rather than heat for dyeing and finishing textiles. Studies include radiation-induced fixation of flame retardants in fabrics and radiation curing of adhesives in textiles using UV or electron radiation.

Anon

OPPOSITION TO EXTENSION OF NONFLAMMABILITY STANDARDS TO ALL CLOTHING
Chem. Wk. 115 (10): 10 (Sept. 4, 1974)

Ten public members of the Consumer Product Safety Commission object to extending nonflammability standards to all clothing. Reason: it might put some essential clothing out of the price range of low-income families.

Alarie, Y. et al

SENSORY IRRITATION EVOKED BY POLYURETHANE DECOMPOSITION PRODUCTS

Paper to be presented at A.C.S. Rubber Division 106th Meeting,
Philadelphia, Pa., Oct. 15-18, 1974

After the burning of a flexible and a rigid polyurethane foam, each burned with and without a flame retardant, mice were exposed to the decomposition products (diluted with air. There was no significant difference in sensory irritation between the flexible foam and its counterpart, containing a flame retardant; this was true also for the two rigid foams. Large, significant differences were noted, however, between the two types of foams, with and without flame retardants. Evidently, the nature of the foams, rigid vs. flexible, is the controlling factor. Their rate of release of gases and smoke is different.

FLAME RETARDANTS

SEE: 3-0002, Acrylonitrile

Aviado, D.M. and Belej, M.

COMPARATIVE TOXICITY OF AEROSOL PROPELLANTS

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Monkeys, used to test the inhalation toxicity of 15 aerosol propellants, showed the usual pattern of bronchopulmonary response. In a classification scheme, based on bronchopulmonary toxicity, propellants causing the known effects at concentrations of 1-5% were considered to have *high toxicity*; at 6-10%, *intermediate toxicity*; and at 11-20%, *low toxicity*. *High-pressure* propellants had *intermediate toxicity* or *low toxicity*. The former class included FC-12 and FC-22; the latter, FC-115 and FC-152a. *Low-pressure* propellants with *high toxicity* included FC-11, FC-21, and FC-113; with *intermediate toxicity*, FC-114, FC-142b, and FC C-318. FC-11 (trichlorofluoromethane) was most toxic, inducing cardiac arrhythmia at a concentration of 2%. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 81-2 (July 1974)]

Borgstedt, Harold H.

MYOCARDIAL SENSITIZATION TO EPINEPHRINE BY HALOTHANE AND TWO HALOGENATED
CYCLOBUTANES

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Myocardial sensitization to epinephrine must be watched, when halogenated hydrocarbons are considered as inhalation anesthetics. In these studies on dogs, halothane (1.25%), 1-bromo-1,2,2-trifluorocyclobutane (1.5%), and 1-chloro-1,2,2-trifluorocyclobutane (2.5%) had similar sensitizing potential. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 100 (July 1974)]

Wills, J.H. and Silber, D.

THE EFFECTS OF FREON 11 ON ISOLATED AURICLES

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Freon 11 vapors apparently cause no permanent damage to spontaneously beating auricles from rat's hearts. Exposed to low concentrations of Freon 11 (1% v/v in a 95% O₂, 5% CO₂ gas), contractions first increased in force while decreasing in frequency. At higher concentrations, contractions decreased in force and sometimes stopped. When Freon 11 was removed from the gas, contractions resumed. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 133 (July 1974)]

Sherman, H. et al

THE ORAL TOXICOLOGY OF DICHLORODIFLUOROMETHANE

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Rats, first exposed to dichlorodifluoromethane in utero, were given the compound (25-11 and 250-130 mg/kg) by intragastric intubation for 2 years. At the higher dose level, rats showed a small decrease in the rate of body weight gain but no clinical toxicity effects. Given orally, dichlorodifluoromethane did not affect mortality; results of hematology, urine analysis, and liver function tests were normal. There was no evidence of teratogenicity -- reproduction and lactation proceeded normally and there was no change in the lethal mutation index in rats. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 152 (July 1974)]

Bowman, Robert E.
HALOTHANE FINDINGS (Letter to Editor)
Science News 106 (10): 147 (Sept. 7, 1974)

The author compliments the editor for the fair and accurate accounting of his work on halothane-learning (Science News: 8/17/73, p. 103), but cautions that more work must be done before it can be determined that further regulation of halothane is necessary for human safety.

3-0031
FLUOROCARBONS
(Production)

Vecchio, Martino
MAKE CHLOROFLUOROETHANES DIRECTLY
Hydrocarbon Process. 52 (8): 97-9 (1974)

Process chemistry and process technology involved in the production of trichlorotrifluoroethane, dichlorotetrafluoroethane, and chloropentafluoroethane by continuous methane chlorofluorination are described. By use of an active, selective catalyst in a fluidized bed, the chlorofluorocarbons can be produced continuously at low cost.

FLUOROCARBONS

SEE: 3-0012, Arsenic
3-0021, Flame Retardants
3-0022, Flame Retardants

SEE ALSO: 3-0054, Polyurethanes

Anon

U.S. SAFETY OFFICIALS HAVE WARNED INDUSTRY OF ANOTHER CARCINOGEN WORRY
Chem. Wk. 115 (10): 10 (Sept. 4, 1974)

NIOSH is screening textile, paper, leather tanning and drycleaning operations and medical laboratories for signs of bis-chloromethyl ether (BCME), which has been identified as a carcinogen. Believed to occur only as a by-product of the methyl chloromethyl ether used in purifying water for electrical generating stations, BCME may form from the reaction of formaldehyde with hydrogen chloride in the air. After its study of formaldehyde-using industries, NIOSH may take further regulatory action against BCME.

HALOETHERS

SEE: 3-0002, Acrylonitrile

Grant, D.L. et al

EFFECTS OF HEXACHLOROBENZENE ON LIVER PORPHYRIN LEVELS AND MICROSOMAL ENZYMES
IN THE RAT

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Hexachlorobenzene (HCB), a persistent fungicide, was fed to rats for 274 days in diets containing 0, 10, 20, 40, 80 or 160 ppm HCB. Sex affected acquired porphyria -- on the 80 ppm HCB diet, females had 202 nmol porphyrin (calculated as coproporphyrin) g liver, while males had 0.12 nmol. Both sexes showed similar dose-related residues in liver; both showed (liver) body weight ratio increase on the 80 and 160 ppm diets. Females fed at least 20 ppm HCB experienced a decreased pentobarbital sleeping time. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 101 (July 1974)]

Kuiper-Goodman, T. et al

TOXIC EFFECTS OF HEXACHLOROBENZENE IN THE RAT: CORRELATIONS OF ELECTRON MICROSCOPY WITH OTHER TOXIC PARAMETERS

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Effects of subacute feeding of diets containing hexachlorobenzene (HCB), 700 rats were fed diets containing 0, 0.5, 2.0, 8.0, and 32.0 mg/kg body weight, and then killed in groups of 4 at from 3 to 12 weeks of feeding and at various times after the HCB diets were stopped. Among the results: significant increase in lever weight in males; 26% of females fed the highest dose diet died, but none of the males died. Apparently, responses to HCB differ according to sex. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 101 (July 1974)]

Villeneuve, D.C. et al

PLACENTAL TRANSFER OF HEXACHLOROBENZENE IN THE RABBIT

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Placental transfer effects of hexachlorobenzene (HCB) were studied in rabbits, which were mated on day 0 and then given HCB orally from day 1 to day 27. Sub-toxic doses of 0, 0.1, 1.0 or 10 mg/kg were used. Fetuses of dams were excised and tissues removed on day 28. HCB content of maternal and fetal tissue crossed the placenta and accumulated in the fetus. Response was dose-dependent. Highest HCB concentration was in the fat tissue. Concentrations decreased then in this order: liver, heart, kidney, brain, lung, spleen, and plasma. Liver concentrations were higher while brain concentrations were lower in the fetus organs than in the maternal. At all diet levels, there were no fetotoxic effects. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 108 (July 1974)]

Khera, K.S.

HEXACHLOROBENZENE: TERATOGENICITY AND DOMINANT LETHAL STUDIES IN RATS

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

To investigate the teratogenic potential of hexachlorobenzene (HCB), which has been found in birds, fish, mussel and animal tissues, and was also suspect in a 4-year epidemic of human poisoning in Turkey during the late 1950's, rats were given single daily po doses ranging from 0 to 120 mg/kg HCB during varying periods from 6-21 days of gestation. Maternal toxicity and reduced fetal weight resulted from the 80 and 120 mg/kg doses. Increased incidences of uni- and bilateral 14th rib among fetuses appeared to be dose- and duration-related. Fetal weight and other skeleton anomalies were normal. For the dominant lethal test, males were given oral doses of from 0 to 60 mg/kg for 10 days and mated with virgin females. Incidence of pregnancies, corpora lutea and other related effects were not unlike those in the control animals. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 109 (July 1974)]

Turner, John C. and Green, Richard S.

EFFECT OF HEXACHLOROBENZENE ON MICROSOMAL ENZYME SYSTEMS

Biochem. Pharmacol. 23 (17): 2387-90 (Sept. 1, 1974)

Increased microsomal protein levels resulted when male rats were fed diets containing 333 ppm hexachlorobenzene for 10 days. Increases were noted also in the levels of aniline hydroxylase, cytochrome P-450, etc. Because hexachlorobenzene also stimulated the 2-hydroxylation reaction, it may be a potential carcinogenic hazard.

Villeneuve, D.C. et al

THE EFFECTS OF PHENOBARBITAL AND CARBON TETRACHLORIDE ON THE RATE OF DECLINE OF BODY BURDENS OF HEXACHLOROBENZENE IN THE RAT

Arch. Environ. Contam. Toxicol. 2 (3): 243-52 (1974)

Weaned rats were given diets of 0, 20, and 40 ppm of hexachlorobenzene (HCB) for 3 months, then given an HCB-free diet and dosed with sodium phenobarbital or carbon tetrachloride. Post-mortem tissue analyses showed a depression of plasma cholinesterase, liver aniline hydroxylase, and N-demethylase activities from the carbon tetrachloride treatment, and an increase in the last two activities from phenobarbital treatment. Females on the 20 and 40 ppm diets seemed to have higher residues in their tissues than the males, in the order of: fat > liver > kidney > spleen = heart = brain plasma. There was no direct correlation between induction of enzyme activity and rate of disappearance of HCB residues in liver tissue.

Varga, G.M., Jr.

VAPOR DETECTOR

Esso Res. and Eng. Co., Linden, N.J., Government Res. Lab.

Final Rept. 10 Oct. 1972-15 Nov. 1973 (15 Feb. 1974). Rept. No. GRU.1

DJAE.74 RK-CR-74-8. Contract DAAH01-73-C-0137

For quantitative determination of unsymmetrical dimethyl hydrazine (UDMH) under certain conditions of humidity, coated piezoelectric crystals are effective in the range of 2 ppm to 15 ppm UDMH. Acrylonitrile-butadiene and styrene-butadiene are effective coatings, permitting also the quantitative monitoring of water vapor. [Abstr. in: Govt. Reports Announcements 74 (16): 59 (Aug. 9, 1974)]

3-0040
ISOCYANATES (Organic)
(Production)

Anon

ANILINE SUPPLY TIGHT, EXPANSION UNCERTAIN

Chem. Eng. News 52 (36): 7-8 (Sept. 9, 1974)

Increasing demand for aniline, now in short supply, stems primarily from rapid growth of isocyanates during past five years. In 1974, about 215 million lbs of aniline will be used to make MDI (4,4'-methylene-diphenyl isocyanate and polymeric isocyanate, both used to make rigid polyurethane foams. Isocyanates and rubber chemicals combined take over 75% of total aniline production -- 40% for isocyanates, 35% for rubber chemicals. The 270 million lbs of aniline-based isocyanates estimated to be produced in 1974 is a restricted amount because of lack of available aniline.

3-0041
ISOCYANATES (Organic)
(Production)

Anon

A NEW CANADIAN COMPANY IS BEING FORMED

Chem. Eng. News 52 (37): 6 (Sept. 16, 1974)

Valley Chemicals, Ltd., will be set up by late 1977 at a yet unpicked site to make the polyurethane intermediates, aniline and methylenediphenyl isocyanate. Kenbudge Holdings, Ltd., Cornwall, Ontario, will spend \$55 million on the plant to achieve "world-scale capacity," under a technology license from Mitsui Toatsu Chemicals, Japan.

ISOCYANATES (ORGANIC)

Bodner, A.H. et al

HEALTH HAZARD EVALUATION/TOXICITY DETERMINATION. AMERICAN STANDARD FIBERGLASS, INC., STOCKTON, CALIFORNIA

National Institute for Occupational Safety and Health, Cincinnati, Ohio

A NIOSH-conducted health hazard survey of American Standard Fiberglass, Stockton, Calif., showed toxic concentrations of styrene and methylene bisphenyl isocyanate to be present. Determination was based on environmental levels of the two compounds, employee interviews, and current literature on styrene and methylene bisphenyl isocyanate. [Abstr. in: Govt. Reports Announcements 74 (16: 47 (Aug. 9, 1974))]

ISOCYANATES (ORGANIC)

Vandervort, R. and Shama, S.K.

HEALTH HAZARD EVALUATION/TOXICITY DETERMINATION. KING SEELEY THERMOS COMPANY, MACOMB, ILLINOIS

National Institute for Occupational Safety and Health, Cincinnati, Ohio.

Final Rept. Apr.-June 1973 (Nov. 1973). NIOSH-TR-090-74, HHE-73-30-90

The National Institute for Occupational Safety and Health (NIOSH) conducted a health hazard survey to evaluate toluene diisocyanate (TDI) found in polyurethane foam materials used at King Seeley Thermos Company, Macomb, Illinois. It was determined that exposure to toluene diisocyanate in this plant was potentially toxic to sensitive employees. It was not positively established how sensitive employees acquired their sensitivity to TDI. Although past exposures to transient high levels of TDI due to spills of foam materials were considered an important cause of sensitivity, sensitivity in some cases may have resulted from chronic exposures to low levels of TDI. Recommendations were made to management regarding medical monitoring programs, engineering control, employee protective equipment, and work practices. [Abstr. in: Govt. Reports Announcements 74 (16): 43 (Aug. 9, 1974)]

ISOCYANATES (Organic)

SEE: 3-0002, Acrylonitrile

3-0047, Moca

SEE ALSO: 3-0054, Polyurethanes

3-0055, Polyurethanes

3-0056, Polyurethanes

Anon

CONVERSION TO COAL-DERIVED LOW-B.t.u. GAS FROM OIL OR NATURAL GAS

Chem. Eng. News 52 (36): 12 (Sept. 9, 1974)

Under contract to EPA, Battelle, Columbus, reports that U.S. industry could convert from oil or natural gas to coal-derived low-B.t.u. gas, but not without difficulty. Ash disposal, coal dust control, removal of potential atmospheric emissions are factors for environmental consideration. To handle the greater volumes of gas required, companies would have the added job of producing energy and would have to modify manufacturing operations to a great extent.

Anon

OL' KING COAL IS BACK, AS PART OF THE HPI

Hydrocarbon process. 52 (8): 13, 15 (1974)

A brief review of new processing developments in coal gasification. Includes: Institute of Gas Technology's U-GAS process; FMC's pilot unit, Princeton, N.J.; and International Systems and Controls work, under EPA contract, on a new coal combustion process aimed at providing low-grade, high-sulfur coals that will still permit power plants to meet EPA anti-pollution standards.

LIQUEFACTION AND GASIFICATION OF COAL

Burke, Donald P.

THEY'RE MAKING A SOLID EFFORT TO GET CLEAN COAL LIQUIDS

Chem. Wk. 115 (11): 38-43 (Sept. 11, 1974)

Office of Coal Research's emphasis on liquefaction of coal seen in planned and existing contracts with Hydrocarbon Research, Inc., Fluor Corp., Stanford Research Institute, Bechtel et al. Review of various processes that are under study.

3-0047
MOCA

Anon
KRYPTONICS PLANT
Rubber Age 106 (9): 91 (1974)

Kryptonics, Inc., Boulder, Colo., has spent over \$500,000 to meet OSHA regulations for the production of MOCA and toluene diisocyanate (identified carcinogens) in its new 16,000-square-foot plant.

3-0048
MOCA
(Production)

Anon
VULCANIZING AGENTS
Rubber Age 106 (9): 12 (1974)

DuPont announces a price increase for its rubber processing agent, MOCA, from \$1.59 to \$1.71 a pound.

Conley, Walt and Tipton, Alan R.

PART I. A CONCEPTUAL MODEL FOR A TERRESTRIAL ECOSYSTEM PERTURBED WITH SEWAGE EFFLUENT, WITH SPECIAL REFERENCE TO THE MICHIGAN STATE UNIVERSITY WATER QUALITY MANAGEMENT PROJECT. PART II. A PERSONALIZED BIBLIOGRAPHIC RETRIEVAL PACKAGE FOR RESOURCE SCIENTISTS

Michigan State Univ., East Lansing, Dept. of Fisheries and Wildlife. Project completion rept., 1 Apr. 1972-1 Jul. 1973 (Nov. 1973). W74-07606, OWRR-A-063-MICH (1). Contract DI-14-31-0001-3822. (PB-232 002/6GA).

The report is provided in two distinct but interconnected parts. Part I contains discussions of management and design problems, components of terrestrial ecosystems, and specific site descriptions, all as they pertain to the sewage effluent spray program of the Michigan State University Water Quality Management Project. Part II began as an effort to compile a bibliographic reference file for the above project. This portion grew into the construction of relevant software, and was built around a 2500 citation bibliography. The bibliography is specifically oriented towards sewage effluent treatments, and is currently operative and available for interested researchers. A second bibliography is also described in this section. [Abstr. in: Govt. Reports Announcements 74 (14): 31 (July 12, 1974)]

Fulkerson, W. et al

ECOLOGY AND ANALYSIS OF TRACE CONTAMINANTS

Oak Ridge National Lab. PR, Jan. 1973-Sept. 1973 (Jan. 1974)

Contract W-7405-eng-26. ORNL-NSF-EATC-4

This is the second progress report of the Oak Ridge National Laboratory Ecology and Analysis of Trace Contaminants Project sponsored by the Environmental Aspects of Trace Contaminants Program of NSF/RANN. The objective of the work is to develop techniques and information that will be useful in assessing the environmental impact of toxic trace substances and in reducing discharges of these materials. The work is not specific to any one trace contaminant, but much of the effort to date has been focused on toxic elements. The research involves five areas: development of a Unified Transport Model for trace contaminants; ecological research to characterize the translocation and accumulation of trace elements in the environment; measurements research to improve analytical efficiency and capability; development of aqueous abatement technology; and information flow and management. [Abstr. in: Govt. Reports Announcements 74 (16): 40 (Aug. 9, 1974); NSA 29 (12): 3079 (#31635)]

McDonald, T. et al

ACUTE AND SUBACUTE TOXICITY EVALUATION OF INTRAVENOUS SODIUM FLUORESCEIN IN
MICE, RATS AND DOGS

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Sodium fluorescein, used intravenously for angiogram testing, was evaluated for its acute and subacute toxicity. Its iv LD50 in mice, rats, and dogs was approximately 1000 mg/kg. Most test results were considered normal, but treatment-related incidences of salivation and emesis were noted for 500 and 100 mg/kg. There were three mortalities at 400 mg/kg. [Abstr. in: Toxicol. and Appl. Pharm. 29 (1): 97-8 (July 1974)]

Giliberg, B.O.

OPTICAL BRIGHTENERS AND SOCIAL RESPONSIBILITY (LETTER)
Science 185 (4155): 901 (13 Sept. 1974)

Responding to comments about him and his activities in Sweden as an environmentalist and scientist, the writer states that although he reported in 1971 that he had induced mutations in yeast from original samples of optical brighteners obtained from detergent manufacturers, he later reported that he could not obtain the same effects with other samples. He cites two references claiming that brighteners have caused allergies, and stresses the need to continue genetic studies with optical brighteners because of his one-time results.

OPTICAL BRIGHTENERS

SEE: 3-0002, Acrylonitrile

Lawrence, W.H. et al

A TOXICOLOGICAL INVESTIGATION OF THE ACUTE, SUBCHRONIC, AND CHRONIC EFFECTS OF ADMINISTERING DI-2-ETHYLHEXYL PHTHALATE (DEHP) AND OTHER PHTHALATE ESTERS
Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology, Washington, D.C., March 10-14, 1974

Biological tests for acute, subchronic, and/or chronic toxicity of 12 phthalic acid esters, some of which are used as plasticizers for biomedical devices, showed their acute ip LD50 in mice ranged from 3.22 to more than 100 g/kg. Chronic toxicity for most was 2-4 times higher than acute toxicity, but di-n-octyl phthalate (DOP) and di-2-ethylhexyl phthalate (DEHP) were 22 and 28 times more toxic chronically, respectively. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 87-8 (July 1974); paper in: Environ. Res. 9 (1): 1-11 (Feb. 1975)]

PHTHALATES

SEE: 3-0002, Acrylonitrile

Anon

URETHANE FOAM PROCESS GIVES BETTER PRODUCT

Chem. Eng. News 52 (36): 14-15 (Sept. 9, 1974)

Rubicon Chemicals, Inc., has licensed the foamex process for making flexible urethane foam to three U.S. companies (one started up last January, other almost ready to go); expects 30-50 new U.S. plants to be built in next five years. The Foamex process merely changes way of foaming and handling the material, not the chemistry. Among advantages cited for process: reduction in loss of carbon dioxide and/or fluorohydrocarbon, enabling maintenance of foam density with either less TDI or less fluorohydrocarbon.

Robeson, John H. and Hyre, John E.

BASIC CHEMISTRY AND TECHNOLOGY OF URETHANES

Rubber Age 106 (9): 47 (1974)

The chemistry of polyurethanes (reactions, polyols and isocyanates, catalysts, surfactants, and blowing agents) and their technology and applications (rigid foams, semi-flex foams, flex foams, and elastomers - coatings and thermoplastics) will be the subject of an afternoon session of the A.C.S. Rubber Division meeting to be held in Philadelphia, Pa., on Oct. 15-18, 1974.

Voorhees, K.J. et al
PYROLYSIS OF A FLEXIBLE URETHANE FOAM
Paper to be presented at A.C.S. Rubber Division 106th Meeting, Philadelphia,
Pa., Oct. 15-18, 1974

Analysis of the products from the pyrolysis at different temperatures of a commercial flexible urethane foam via a computerized gas chromatograph-mass spectral system showed that volatile materials produced equalled 30% of the total sample weight. Compound structures will be discussed. The residue from pyrolysis was deep yellow (oil or crystals), high in nitrogen, with traces of tolylene diisocyanate and other chemicals. Mechanism for degradation is postulated. [Abstr. in: Rubber Age 106 (9): 49 (1974)]

POLYURETHANES

SEE: 3-0002, Acrylonitrile
3-0025, Flame Retardants
3-0040, Isocyanates(Organic)
3-0041, Isocyanates(Organic)
3-0043, Isocyanates
3-0047, Moca

Stewart, R.D. et al

DEVELOPMENT OF BIOLOGIC STANDARDS FOR THE INDUSTRIAL WORKER EXPOSED TO TRICHLOROETHYLENE

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology, Washington, D.C., March 10-14, 1974

Male subjects were exposed for varying lengths of time, 5 days/week in a controlled environment chamber at weekly average steady exposure concentrations of 20, 100 (steady and fluctuating), and 200 ppm of trichloroethylene (TCE). Females were exposed to a 100 ppm steady average concentration for 1 week. No deleterious effects on health related to lungs and heart were noted. Electroencephalographic and visual evoked response studies, however, showed some mild changes, which could indicate the start of some harmful changes in central nervous system functioning. Urine analyses, made for trichloroethanol and trichloroacetic acid, indicate that such a technique has limited value as a biological standard for the worker exposed to TCE. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 82-3 (July 1974)]

Stewart, R.D. et al

USE OF BREATH ANALYSIS TO MONITOR TRICHLOROETHYLENE EXPOSURES

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology, Washington, D.C., March 10-14, 1974

Highly reproducible results in a series of trichloroethylene (TCE) breath decay curves, coupled with the narrow range of TCE in the breath at a specific time shortly after exposure, argue for the use of breath analysis for rapidly estimating the magnitude of recent TCE exposure. The method is also useful for estimating time-weighted-average vapor exposure the day after exposure. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 83 (July 1974)]

Stewart, R.D. et al
"DEGREASERS' FLUSH": DERMAL RESPONSE TO TRICHLOROETHYLENE AND ETHANOL
Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology,
Washington, D.C., March 10-14, 1974

Although trichloroethylene (TCE) is generally considered to be a nonhazardous industrial solvent, it can cause a skin condition, called "degreasers' flush."

This flush occurred in a subject, who was participating in TCE breath analysis tests, after he had drunk beer. Later studies made with subjects given alcohol after TCE exposure showed that the flush occurs when an alcohol-containing beverage is taken after repeated exposures to TCE. The mechanism responsible for this effect was not determined. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 83 (July 1974)]

Anon
ORGANIC POLLUTANTS IN THE SEA
Nature 250 (5468): 622 (Aug. 23, 1974)

Over 200 substances considered significant pollutants of water in the United Kingdom were identified at a discussion meeting of the Royal Society on July 4-5, 1974. The chemical stability, susceptibility to degradation, and the routes and terminal situations of their passage are factors determining the sea persistence of organic pollutants. For example, CCl_4 has a half life of a few hours, while EDC tars deriving from vinyl chloride have half lives of days or weeks. Aromatic compounds of high carbon number may persist for years.

Anon
COMMENTARY
Aerosol Age 19 (8): 7 (1974)

FDA is talking about "zero tolerance" for 2-Mercaptoimidazoline (NA-22, a tradename, or 2-M or 2-Mercapto). A neoprene accelerator used in the preparation of flowed-in valve gaskets and cut-rubber gaskets (items used by biological, cosmetic and medical product manufacturers), 2-M under certain aqueous conditions can be converted to ethylenethiourea, a known carcinogen. Apparently, 2-M itself is not a carcinogen, but it may migrate from gaskets and rearrange into ethylenethiourea. Another concern centers on the use of 2-M in aerosol cans. If extracted from the neoprene gasket into the dispensed product, what is the degree of human risk from inhalation or dermal exposure to 2-M or its by-products from the dispensed product.

Current studies indicate that there is no vinyl chloride involved with 2-M. Only minute quantities of ethylenethiourea have been extracted and only in water.

Anon
PVC CANCER DEATHS
Rubber Age 106 (9): 78 (1974)

The Connecticut Health Department has reported the deaths of two workers in polyvinyl chloride fabricating companies. Cause of death was liver angiosarcoma. Previously reported cases of angiosarcoma have been traced to vinyl chloride gas exposure in VC manufacturing plants or in polymerization plants.

Hagstrom, A. and Normark, S.
TOXIC EFFECTS AND ACTION OF CHLORINATED BY-PRODUCTS FROM VINYL CHLORIDE
PRODUCTION ON *ESCHERICHIA COLI* K 12
Ambio 3 (2): 77-9 (1974)

EDC-tar, a by-product from the manufacture of VC plastics, contains ethanedichloride. In 1970, EDC-tar, dumped off the Norwegian coast, caused fish kills. This study reports on the toxicity of EDC-tar on the gram-negative bacterium *E. coli* by EDC-tar is associated with a decreased stability of the cytoplasmic membrane.

Anon

PUTTING VCM EMISSIONS ON SKIDS

Chem. Wk. 115 (12): 66, 71 (Sept. 18, 1974)

With OSHA's final standards for workers' exposure to vinyl chloride scheduled for October, industry is striving for alternative methods of reducing plant emissions, claiming the loss of up to 2.2 million jobs if the "no detectable limit (actually, 1 ppm) enforced. The four polymerization production processes are reviewed briefly. Vinyl producers are investing in new monitoring devices and improving housekeeping procedures.

The 24 reported cases of angiosarcoma include one worker in a Swedish monomer plant, 20 in PVC plants, two in compounding and fabricating operations, and one in a W. German aerosol pesticide container-filling operation that used VCM as a propellant. Apparently, there is no available substitute material for many of PVC's applications.

Anon

ALL AEROSOLS WITH VINYL CHLORIDE COULD BE BANNED

Chem. Eng. 81 (18): 23 (Sept. 2, 1974)

The U.S. Consumer Products Safety Commission recommends the banning of all aerosols that contain vinyl chloride, which has produced liver cancer in various animals at concentrations as low as 50 ppm. According to the CPSC, a typical aerosol product, sprayed for 30 seconds in a small bathroom, could generate 250 ppm of VC.

VINYL CHLORIDE

SEE: 3-0002, Acrylonitrile
3-0026, Fluorocarbons

Anon

DUMPING THREAT PROBED

Chem. Wk. 115 (10): 14-15 (Sept. 4, 1974)

Following a reported high incidence of cancer deaths in the area near Galaxy Chemicals' solvent-reprocessing plant in Little Elk, Md., Maryland banned chemical waste dumping by the plant. A federal-state task force is investigating the possibility that a high death rate in the area is traceable to the dumping. Galaxy admits using illegally a nearby quarry as a dumping site.

Morris, R.J. and Culkin, F.

LIPID CHEMISTRY OF EASTERN MEDITERRANEAN SURFACE LAYERS

Nature 250 (5468): 640-2 (Aug. 23, 1974)

In addition to the natural lipid material found in organic surface films in most of the world's major ocean, there are in the films smaller, variable amounts of petroleum hydrocarbons. Sampling of the films in the eastern Mediterranean showed high levels of non-natural product hydrocarbons in the lipids of zooplankton species. Although the near-surface plankton can tolerate high levels of pollutant hydrocarbons in their lipids with no adverse effects, they represent a stage at which such compounds can be introduced into the marine food web. Undoubtedly, increasing oil tanker traffic in the Mediterranean will accentuate this situation.

Anon
INTERNATIONAL DYESTUFFS ASSOCIATION FORMED
Chem. Ind. (No. 15): 582 (Aug. 3, 1974)

A new international association, the Ecological and Toxicological Association of the Dyestuffs Manufacturing Industry (ETAD), founded on 21 June 1974, will have permanent headquarters in Basle, Switzerland. With German, British, and Japanese firms numbered among its charter members, ETAD will aim at coordinating and unifying the efforts of manufacturers to lessen the ecological impact of their products, during manufacture and in use.

Packman, S.C. and Petajan, J.H.
THE PHYSIOLOGICAL RESPONSE TO SMOKE AND COMBUSTION PRODUCTS
Paper to be presented at the A.C.S. Rubber Division 106th Meeting to be held in Philadelphia, Pa., Oct. 15-18, 1974

More fire deaths may be due to smoke inhalation than to flames. The increasing use of plastics argues for the need for useful data on the potential hazards of combustion products from plastics. Described here is an animal model for determining the physiological and behavioral changes resulting from smoke exposure. [Abstr. in: Rubber Age 106 (9), 48 (1974)]

WHO

HEALTH HAZARDS OF THE HUMAN ENVIRONMENT

World Health Organization, Geneva, 1972. \$11

This publication presents concise, readily-locatable, and documented information. Its 4 parts cover the community environment, chemical contamination and physical hazards, a proposed world system of environmental surveillance and monitoring, and a discussion of environmental health hazards from the viewpoint of public health operations and the principles of intervention and control procedures. [Review in: Chem. Ind. (No. 15): 614 (Aug. 3, 1974)]

Gillette, Robert

PLUTONIUM (I): QUESTIONS OF HEALTH IN A NEW INDUSTRY

Science 185 (4156): 1027-32 (Sept. 20, 1974)

A case history of exposure by inhalation to plutonium and other instances of exposure and overexposure in weapons work and in private facilities reclaiming and recycling plutonium raises the question of long-term occupational health effects of this very toxic element, which tends to burn spontaneously and is a potent carcinogen in animals. To date, no cancer has been detected in humans exposed to plutonium during World War II, but over 200 have accumulated a "body burden" beyond the radiological safety level for this metal.

Anon

TOUGH CURBS PLANNED ON HAZARDOUS CHEMICALS SPILLS

Chem. Wk. 115 (10): 28 (Sept. 4, 1974)

EPA announced a preliminary list of (300) hazardous materials and the criteria that will govern the designation of a material as hazardous. By mid-1975, EPA expects to have ready a finalized list of hazardous materials, a specification for each material when spilled, and a schedule of penalties for materials that cannot be removed after a spill.

About 3,000 off-site spills of hazardous materials/yr with perhaps 7,000 more occurring at plants was the estimate of EPA's P.B. Lederman, who also stated that an estimated 2 billion tons of hazardous materials transported now by all carriers in the U.S. could double by the end of the decade.

Anon

COMMODITY SUPPLIES PROBED BY SENATE

Chem. Eng. News 52 (36): 5 (Sept. 9, 1974)

The Senate Permanent Subcommittee on Investigations polled 500 companies re the supply situation for 63 commodities. Among the major causes of materials shortages (in petrochemicals, plastics, paper, chemicals, steel and steel products) is cited the "inflexibility" of environmental regulations. Many companies have curtailed production and even shut down rather than invest in costly antipollution equipment.

REGULATIONS AND STANDARDS

Anon

NATIONAL COMMISSION ON WATER QUALITY

Chem. Eng. News 52 (36): 6 (Sept. 9, 1974)

What will be the impact of the 1972 federal Water Pollution Control Act on such industries as organic chemicals, textiles, plastics and synthetics, iron and steel, and petroleum refining? The National Commission on Water Quality hopes to find out on completion of 18 contracts awarded at a total price of \$2.6 million.

REGULATIONS AND STANDARDS

SEE: 3-0004, Acrylonitrile
3-0009, Arsenic
3-0010, Arsenic
*3-0014, Asbestos
*3-0015, Asbestos
*3-0016, Asbestos
3-0024, Flame Retardants

Anon

AN ACRYLONITRILE PLANT IS BEING BUILT ON TAIWAN
Chem. Eng. News 52 (38): 8 (Sept. 23, 1974)

China Petrochemical Development Corp., Taiwan will have a new acrylonitrile plant on stream by 1977, near a 145 million lb/yr acrylonitrile plant scheduled for completion in 1975 at Kaohsiung. Process technology is licensed from Standard Oil (Ohio).

Anon

MONSANTO IS EXPANDING ITS CAPACITY IN THE U.K.
Chem. Eng. News 52 (38): 8 (Sept. 23, 1974)

Monsanto will almost triple its capacity for acrylonitrile in Teesside in the United Kingdom to meet planned capacity expansion for fibers and raw materials for plastics. Acrylonitrile capacity should top 660 million pounds/year by 1977.

Anon

DU PONT SAYS IT WAS NOT THE SUBSTANTIAL DELAY
Mod. Packag. 47 (9): 118 (1974)

Monsanto's decision to stop marketing and producing Vicobar, a nitrile-type barrier resin was prompted by the desire to push products with "greater earning potential" and not by the long delay in obtaining FDA clearance for the resin. Monsanto planned to promote Vicobar for carbonated-beverage bottles; may yet reverse decision on Vicobar.

4-0004
ARSENIC

Anon

A NO-DETECTABLE LEVEL EMERGENCY STANDARD FOR WORKER EXPOSURE TO ARSENIC
Chem. Eng. News 52 (39): 6 (Sept. 30, 1974)

The Oil, Chemical and Atomic Workers International Union and the AFL-CIO have asked OSHA to set a non-detectable level emergency standard for exposure of workers to arsenic. OCAW claims that oil and chemical industries have refused to provide a generic list of their industrial chemicals, making it impossible to get a count on the number of workers exposed to inorganic arsenic.

4-0005
ARSENIC

Klaassen, Curtis D.

BILIARY EXCRETION OF ARSENIC IN RATS, RABBITS, AND DOGS
Toxicol. Appl. Pharmacol. 29 (3): 447-57 (Sept. 1974)

Rats were given from 0.01 to 4.6 mg/kg of arsenic trichloride intravenously to measure the disappearance of ^{74}As from blood and plasma and its excretion into bile. Arsenic concentration in the blood did not decrease during the 2-hour measurement, but increased, after a transient decrease. At higher doses, arsenic concentration in plasma decreased gradually. Rate of excretion of arsenic into the bile was rapid and highest during the first 15 minutes; it then rapidly decreased. About 25% of each arsenic dose was excreted into the bile within the 2-hour period, but less than 10% was excreted into the feces within 1 week. Slower excretion into the bile occurs in rabbits and dogs. The rat studies indicate an active transport mechanism for biliary excretion, but the importance of this route of elimination depends on the species studied.

4-0006
ARSENIC

State of Florida

RULES OF THE DEPARTMENT OF POLLUTION CONTROL. CHAPTER 17-3. POLLUTION OF WATERS
Department of Pollution Control, 2562 Executive Center Circle East, Montgomery
Building, Tallahassee, Florida 32301

Water quality standards set as the criteria for pollution include: arsenic--
shall not exceed 0.05 mg/l.

4-0007
ARSENIC

State of West Virginia

ADMINISTRATIVE REGULATIONS OF THE STATE OF WEST VIRGINIA FOR WATER QUALITY
CRITERIA ON INTER- AND INTRASTATE STREAMS 1974
Department of Natural Resources, Division of Water Resources, Charleston,
West Virginia 25305

An arsenic limit not to exceed 0.01 mg/l concentration is specified for the
various water uses and water quality criteria set forth in the requirements
governing the discharge of sewage, industrial wastes and other wastes into the
waters of the state.

4-0008
ARSENIC

State of Ohio

OHIO REGULATION EP-1, WATER QUALITY STANDARDS

Ohio EPA, 361 East Broad St., P.O. Box 1049, Columbus, Ohio 43215

According to the Water Quality Standards, effective 27 July 1973, the general standards of the state for arsenic was a maximum allowable concentration of 50 $\mu\text{g}/\text{l}$. Under the stream-water quality criteria, for public water supply arsenic should not exceed a concentration of 0.05 mg/l .

*ARYL PHOSPHATES

See also: 4-0015 (Flame Retardants)

*4-0009
ASBESTOS

Anon

CHEMICALS AND CANCER: SPOTTING THE LINK BEFORE IT'S TOO LATE
Chem. Wk. 115 (14): 29 (Oct. 2, 1974)

At an international conference on occupational cancer, Bologna, Italy, in September, C. Annoscia (Bologna Institute of Oncology) presented the first "sharp" experimental evidence of peritoneal carcinoma from asbestos -- 66% of rats treated with high doses (25mg) of crocidolite asbestos died of the rare abdominal tumor.

Also discussed were cancers from vinyl chloride, and from other chemicals, including aromatic amines, benzene and chrome compounds. An example of the last class, orange molybdenum was tested on rats. Thirty-six of 40 rats exposed to 20-mg aqueous solutions of this chrome compound died during a 15-89 week period.

Maltoni supports the value of predictive testing on animals and urges that new materials be tested for carcinogenicity before release into the human environment.

*4-0010
ASBESTOS

Anon

EMPLOYEES TRYING TO KEEP ASBESTOS MINE OPERATING
Chem. Eng. 81 (18): 23 (Sept. 2, 1974)

Following GAF's announcement that it will close its Lowell, Vermont, asbestos mine rather than spend about \$1 million for required air-pollution control equipment, the mine employees want to raise \$2 million to buy the facilities from GAF. If they do, EPA will extend its deadline for installing the control equipment. According to GAF, the mine can be operated for only about 5 more years. About 200 of Lowell's 515 inhabitants work at the mine.

Anon

ASBESTOS UNDER FIRE

Chem. Wk. 115 (14): 15 (Oct. 2, 1974)

On the basis of a recently completed study indicating that the families of asbestos workers had developed mesothelioma, lung cancer, asbestosis and other asbestos-caused diseases, labor leaders want tougher asbestos exposure standards. They want OSHA to reduce the current 8-hour, time weighted average to a maximum of two fibers from the current five-fiber level; some want a no-detectable level.

The Mount Sinai Medical Center team that studied the health histories of asbestos workers' families plans to study the families of asbestos insulation workers.

Farber, T.M. and Baker, A.

MICROSOMAL ENZYME INDUCTION BY HEXABROMOBIPHENYL

Abstracts of Papers for the 13th Annual Meeting of the Society of Toxicology, Washington, D.C., March 10-14, 1974

Hexabromobiphenyl (HBB) was fed to rats for 30 days in diets containing from 0 to 500 ppm HBB. In a comparison study, rats were fed Arochlor 1254 (PCB) at the level of 5 ppm. Effects on liver weights, liver-to-body weight ratios, microsomal protein, and cytochrome P-450 were measured. At 5 ppm, HBB was apparently the more potent microsomal inducer. [Abstr. in: Toxicol. Appl. Pharmacol. 29 (1): 102 (July 1974)]

4-0013
FLAME RETARDANTS

Anon
WOOL FLAMEPROOFED IN DYEING PROCESS
Chem. Eng. News 52 (38): 49 (Sept. 23, 1974)

Western Regional Research Center, USDA, is using tetrabromophthalic anhydride, or similar compounds, in developing a flameproofing treatment for fabrics. Apparently useful for wool, wool blends, and nylons, the treatment can be applied during the regular dyeing process, during which most of the flame retardant is absorbed by the fabric. Absorption of the anhydride at 6-12% of fabric weight provides satisfactory flame resistance at a cost of about 10¢/garment.

4-0014
FLAME RETARDANTS
(Production)

Anon
A BROMINE PLANT IS PLANNED BY GREAT LAKES CHEMICAL
Chem. Eng. News 52 (38): 8 (Sept. 23, 1974)

Great Lakes Chemical's new bromine plant near El Dorado, Arkansas, should be on stream by early 1976. Great Lakes will also add several new units to its El Dorado plant for the manufacture of brominated flame retardants; expects them to be ready by or before late 1976. Total costs: \$16 to \$20 million.

Anon

THE UPSIDE-DOWN WORLD OF CHEMICALS AND ADDITIVES
Mod. Plast. 51 (9): 57-73 (1974)

This review of supply and demand, technological developments, and consumption includes flame retardants. Phosphate esters are 15-25% oversubscribed, with only PMC planning to increase capacity next year via new Nitro, W. Va. plant with 28,000-ton/yr capacity, but the synthetic triaryl phosphate esters produced will be sold for lubricants and hydraulic fluids as well as for flame retardants.

Some increased production of chlorine-bromine products, brominated aromatics (not biphenyls) noted. Antimony trioxide is still in short supply, but alumina trihydrate is plentiful. Ammonium fluoborate is under test by Harshaw as a new flame retardant. Other products are discussed briefly and a table shows the amounts of flame retardants used in plastics for 1973 and 1974.

Other areas discussed are heat stabilizers, antistats, and UV stabilizers in relation to PVC and other plastics.

Wood, A. Stuart
GETTING SET FOR FIRE-SAFE TV CABINETS
Mod. Plast. 51 (9): 74-7 (1974)

Although high-impact polystyrene is available in good supply for TV cabinets, insufficient supplies of antimony oxide to impart fire resistance may cause manufacturers to shift to other materials, including rigid polyurethane foam, previously considered uneconomical.

Adon
GOV'T FINANCING SPURS COTTON/PE FR RESEARCH
Amer. Dyest. Rep. 63 (9): 64, 66 (1974)

Department of textiles, Clemson University, received a \$475,000 government grant for research on a flame retardant chemical treatment for cotton-polyester. Fires associated with flammable fabrics cause about 300,000 injuries/yr; 3000-5000 deaths in past year from same cause.

Dilley, James V. et al
FLUORIDE ION EXCRETION BY MALE RATS AFTER INHALATION OF ONE OF SEVERAL FLUORO-
ETHYLENES OR HEXAFLUOROPROPENE
Toxicol. Appl. Pharmacol. 27 (3): 582-90 (1974)

Rats were exposed to atmospheres containing 2200 to 3500 ppm of various fluoroethylenes (tetra- and trifluoroethylene, vinylidene fluoride, vinyl fluoride, hexafluoroethane) and hexafluoropropene for 30 minutes. Results included an increase in urinary fluoride ion and in creatinine. Except for those exposed to vinylidene fluoride, rats experienced a significant increase in urine excretion, with the highest excretion attributed to hexafluoropropene. This diuresis persisted for two weeks. A marked glucosuria was noted in hexafluoropropene-treated rats. The only unusual gross pathological change was attributed to hexafluoropropene, which caused a definite necrosis of the proximal renal tubules. The increased urinary excretion of fluoride ion indicates that the simple fluoroalkenes are biodegradable.

Cicerone, Ralph J. et al
STRATOSPHERIC OZONE DESTRUCTION BY MAN-MADE CHLOROFLUOROMETHANES
Science 185 (4157): 1165-7 (Sept. 27, 1974)

The release of chlorine in the stratosphere from the breakdown of man-made chlorofluoromethanes will have a significant effect on future ozone concentrations in the stratosphere. Calculations presented indicate that continued use of chlorofluoromethanes at current levels can promote chlorine-catalyzed ozone destruction rates exceeding all natural sinks of ozone in the stratosphere by the early 1980's. Even if emissions were curtailed now, ozone destruction would reach a maximum by 1990 and the effects would continue for several decades.

4-0020
FLUOROCARBONS

Anon
CHLOROFLUOROCARBONS THREATEN OZONE LAYER
Chem. Eng. News 52 (38): 27-30 (Sept. 23, 1974)

Scientists in the U.S. and England have been studying chlorofluorocarbons and their potential effect on the earth's protective ozone layer. Reports presented at the recent 168th ACS National Meeting are reviewed briefly.

4-0021
FLUOROCARBONS

Plant, Albert F.
ANOTHER DISASTER THREATENS (Editorial)
Chem. Eng. News 52 (39): 2 (Sept. 30, 1974)

Referring to the reported loss of ozone in the upper stratosphere from the use of chlorofluorocarbon aerosol propellants, the author cautions that most of the work is theoretical but urges prompt investigation because of the potential dangers.

Cousins, Michael J. et al
THE ETIOLOGY OF METHOXYFLURANE NEPHROTOXICITY
J. Pharmacol. and Exptl. Therapeutics 190 (3): 530-41 (Sept. 1974)

Administration of the anesthetic, methoxyflurane (2,2-dichloro-1,1-difluoroethyl methyl ether) has caused nephrotoxicity in animals and humans. This study indicates, however, that the metabolite, inorganic fluoride, may be the cause of nephrotoxicity. Molecular, or unmetabolized methoxyflurane in itself does not appear to be nephrotoxic.

Anon
A RAPID ANALYTICAL METHOD FOR MONITORING BIS-CHLOROMETHYL ETHER
Chem. Eng. News 52 (38): 23 (Sept. 23, 1974)

Dow Chemical will license a rapid analytical monitoring technique for bis(chloromethyl) ether and chloromethyl methyl ether, which permits detection below 1 ppb in air of these OSHA-labelled carcinogens. The method is faster and cheaper than gas chromatography/mass spectrometry analysis.

Bastron, Robert D. and Kaloyanides, G.J.
EFFECT OF METHOXYFLURANE ON PAH UPTAKE BY RABBIT KIDNEY SLICES
Amer. J. Physiol. 227 (2): 460-4 (Aug. 1974)

This in vitro study showed that methoxyflurane (MOF) can cause significant alteration in PAH, electrolyte, and water transport of renal cortical slices and that these effects cannot be correlated with inorganic F⁻ concentration of the incubation medium.

They do not infer any relationship between the effects of high concentrations of MOF on transport activity in this in vitro system and the clinical appearance of MOF nephrotoxicity in man, but their findings re PAH transport may relate to the observation that clinical anesthesia decreases renal blood flow in man as assessed by the clearance of PAH.

Mazze, Richard I. et al
EFFECT OF ENZYME INDUCTION WITH PHENOBARBITAL ON THE IN VIVO AND IN VITRO
DEFLUORINATION OF ISOFLURANE AND METHOXYFLURANE
J. Pharmacol. and Exptl. Therapeutics 190 (3): 523-9 (Sept. 1974)

This study on rats confirms both the in vivo metabolism of isoflurane and methoxyflurane to inorganic and organic fluorides and the in vitro defluorination of isoflurane by hepatic microsomal enzymes occurs in a system in which reduced nicotinamide adenine dinucleotide phosphate and oxygen were present. One unexplained result of the study was the excessive urine flow experienced by phenobarbital-methoxyflurane-treated rats.

Burns James E. et al

HEXACHLOROBENZENE EXPOSURE FROM CONTAMINATED DCPA IN VEGETABLE SPRAYMEN

Arch. Environ. Health 29 (4): 192-4 (Oct. 1974)

Hexachlorobenzene (HCB), traced as a contaminant in a herbicide [dimethyl 1-2, 3,5,6-tetrachloroterephthate (DCPA)], was detected in the blood residues of 19 out of 20 spraymen, who had used DCPA. HCB residues, in the blood ranged from a trace to 310 ppb, with a mean of 40 ± 63 ppb. Physical examinations, however, showed no cutaneous porphyria nor any abnormalities of uroporphyrins or coproporphyrins. There was also no correlation between HCB levels and serum enzymes. A significant ($P < 0.05$) correlation between HCB levels and delta-aminolevulinic acid (ALA) was questioned because of the site of action of HCB in the biosynthesis of heme.

Wegman, David H. et al
DOSE-RESPONSE RELATION IN TDI[toluene diisocyanate] WORKERS
J. Occup. Med. 16 (4): 258-60 (1974)

Over 100 workers showed a significant decline in forced expiratory volume in 1 second, proportional to the level of exposure, after inhaling 0.002 to 0.013 ppm of toluene diisocyanate during an 8-hour work shift.

4-0028
LIQUEFACTION AND GASIFICATION OF COAL

Anon
PROCESS OF GRINDING AND REFINING COAL LOOKS BETTER THAN EVER
Coal Age 79 (8): 130 (1974)

The Solvent Refined Coal (SRC) process for converting coal to a liquid or a brittle solid is discussed by the Office of Coal Research in a report that covers the effect of location and environmental regulations to be met by an operating SRC plant. Favored by some at OCR, further investigation of SRC will be conducted in a new plant near Tacoma, Wash.

4-0029
LIQUEFACTION AND GASIFICATION OF COAL

Anon
UOP SET TO SCALE UP OIL-FROM-COAL PROCESS
Chem. Eng. News 52 (38): 7 (Sept. 23, 1974)

Universal Oil Products has completed two years of bench and pilot testing of its process for converting high-sulfur coal to synthetic crude oil. The yield is more than four barrels of synthetic crude oil/ton of coal. Other advantages: usable by-products; synthetic crude with less than 0.15% sulfur.

LIQUEFACTION AND GASIFICATION OF COAL

Anon

PLANS ARE UNDER WAY FOR A COAL LIQUEFACTION DEMONSTRATION PLANT
Chem. Wk. 115 (14): 9 (Oct. 2, 1974)

Coalcon Co., owned jointly by Union Carbide and Chemical Construction, having received financial support from industry (chemical, petroleum, and metals companies, not identified) and from the Office of Coal Research, plans to build a 2800-ton/day plant for producing gaseous and liquid fuels from coal. Conversion will be via hydrocarbonization, a dry, fluid-bed hydrogenation process previously tested by Union Carbide in a 300-tons/day semiworks plant.

LIQUEFACTION AND GASIFICATION OF COAL

See also: 4-0036 (Vinyl Chloride)

Murdoch, W.W. and C.P. Onuf
THE MEDITERRANEAN AS A SYSTEM. PART I--LARGE ECOSYSTEMS
Intern. J. Environ. Studies 5 (4): 275-84 (1974)

Concluding that, despite some severe coastal pollution in certain areas, the Mediterranean ecosystems are in no real danger, the authors view the Mediterranean as two separate ecosystems -- large, described in this part; and small, described in Part 2 of their paper.

In the large ecosystem, temperature varies from west to east, salinity varies from intermediate to high, and there are differences in nutrients and in biological productivity, and variations in the phytoplankton communities.

Onuf, C.P. and W.W. Murdoch
THE MEDITERRANEAN AS A SYSTEM. PART II-- SMALL ECOSYSTEMS
Intern. J. Environ. Studies 6 (1): 29-34 (1974)

This discussion of the small ecosystems of the Mediterranean covers the coastal zone, the crucial area of land-sea interactions. Pollution and its various effects are reviewed and it is contended that organic wastes, if concentrated into a few widely spaced zones, can become resources for producing productive fisheries in the assigned zones, freeing the rest of the Mediterranean coast for tourism.

Anon

NEW CHEMICALS: SANDOZ

Amer. Dyest. Rep. 63 (9): 99-100 (1974)

Among new products from Sandoz Colors and Chemicals; a new fluorescent whitening agent for polyester, Leucophor EHT; and Leucophor BCR Liquid, a fluorescent whitening agent for cellulose and the cellulose component in blends.

POLYURETHANES

See: 4-0016 (Flame Retardants)

Messite, Jacqueline

TRICHLOROETHYLENE

J. Occup. Med. 16 (3), 194-7 (1974)

From a review of the literature (10 references dated 1955 to 1973) on the physiological effects of trichloroethylene exposure, it is concluded that additional controlled studies are needed to provide the necessary environmental data on which to base a reliable recommended standard for trichloroethylene.

4-0035
VINYL CHLORIDE

Monson, Richard R. and Peters, John M.
PROPORTIONAL MORTALITY AMONG VINYL-CHLORIDE WORKERS
Lancet Vol. II for 1974 (7877): 397-8 (Aug. 17, 1974)

A 50% excess of deaths from cancer -- primarily cancer of the liver and biliary tract, lung, and brain -- was found in this analysis of the deaths of 161 workers in two plants using vinyl chloride. No excess of deaths from cancer occurred before 1965; since 1970, there have been twice as many deaths from cancer as would be expected.

4-0036
VINYL CHLORIDE
(Manufacture)

Anon
ACETYLENE-FROM-COAL ECONOMICS IMPROVES
Chem. Eng. News 52 (38): 48 (Sept. 23, 1974)

Although the economics of the AVCO arc process for converting coal to acetylene now seems more acceptable, compared with methane and naphtha oxidation and the Wulff process, it may take until 1980 to prove that the process has a clear economic advantage. Significant factors: by-product sales, proximity of plants to consumers, and plant sizes of about 800 million lbs/year.

Anon

VINYL CHLORIDE TO GET EMISSION STANDARD

Chem. Eng. News 52 (38): 6-7 (Sept. 23, 1974)

EPA will develop an air pollution emission standard for vinyl chloride, probably similar to that to be set by OSHA for worker exposure. Despite lack of any scientific evidence of harm to people living near the plants, EPA's R.E. Train believes that there is some hazard and people should be protected via regulatory action.

Over 200 million lb of VC and over 50 million lb of PVC are estimated to be discharged into the environment each year during polymerization of PVC. The 15 VC and 37 PVC resin manufacturing plants in the U.S., responsible for 95% of total VC emissions, would be affected by the air standard. Reduction of about 75% and 90% of VC emissions from PVC resin plants and from VC plants, respectively, is possible using currently available technology.

Anon

SHOWDOWN ON VINYL PLANT RULE PRESENTS SHUTDOWNS

Chem. Wk. 115 (13): 15-6 (Sept. 25, 1974)

An economic impact report to OSHA by Foster D. Snell concludes that industry does not have the technology to attain the no detectable level of VCM; higher costs, fewer plants seen as one result. Possible EPA VCM plant emission standards for plant emissions would add 4% to cost of PVC and preclude venting all in-plant VCM leaks to atmosphere. U.S. companies may build plants abroad, depending on in-plant and emission standards enforced in U.S. and other nations. Compromise hinted at. Chart shows costs and effect on production for various maximum levels.

Clark, Albert C.
MISTAKEN REPRESENTATION
Chem. Wk. 115 (13): 5 (Oct. 2, 1974)

The Manufacturing Chemists Association refutes a statement attributed to it by "Chemical Week" (Sept. 18, p. 66) in connection with the VCM controversy, denying that MCA stated that, "... the industry has recommended a maximum emission limit of 25 ppm., which would be reduced to 10 ppm. in three years."

Polakoff, Phillip L. and Vandervort, Robert
HEALTH HAZARD EVALUATION/TOXICITY DETERMINATION. JOHN MORRELL COMPANY,
SIOUX FALLS, SOUTH DAKOTA.
John Morrell Company, Final Rept., Oct. 1972-Jan. 1973 (Oct. 1973).
NIOSH-TR-089-74, HHE-71-29-89

In response to a request received from a representative of employees, the National Institute of Occupational Safety and Health (NIOSH) conducted a health hazard survey to evaluate exposure to thermal decomposition products of polyvinyl chloride meat packaging film at John Morrell Company, Sioux Falls, South Dakota. Based on medical evidence compiled during a limited study of meat wrapping employees it was determined that air contaminants generated by the thermal cutting of polyvinyl chloride packaging films in conjunction with the wrapping of meat are potentially toxic to some meat wrapping employees. Symptoms range from mild eye, nose and throat irritation to more serious respiratory problems for meat wrappers who have an underlying predisposition to respiratory difficulties. Recommendations have been suggested to management regarding preemployment examinations and work practices.

Anon

MORE POLYPROPYLENE

Mod. Packag. 47 (9): 118 (1974)

Hercules' new polypropylene (PP) plant in Bayport, Texas, which should be on stream in 1974, will have a 400-million-pound/year capacity; the company will also add a 32-million-pound/year PP plant to its facilities in Covington, Va., and increase production of its oriented-PP bottles and jars to 100 million/year at Terre Haute, Indiana. Increased PP production should be a boon to PVC bottlemakers who want to switch to PP, which is now in short supply.

Anon

LOOK FOR FDA'S PROPOSED REGULATIONS ON FREE VINYL CHLORIDE IN PVC SOON

Mod. Packag. 47 (9): 118 (1974)

FDA may permit 10 ppm of VC monomer as a contaminant in PVC. A maximum tolerance of 50 ppb will be permitted for leakage of VC out of PVC packaging into foods, drugs, and cosmetics.

Anon

BUMP IN PVC EXPORTS DISTORTS THE 'NORMALCY' OF FEEDS-LIMITED RESIN GROWTH
Mod. Plast. 51 (9): 28, 30 (1974)

For the first five months of 1974 U.S. production of the five volume thermoplastics rose only 4% over that for the same period in 1973; domestic sales of resins rose only a little more than 1%, and exports rose about 12%.

Polyvinyl chloride production was up slightly for this same period; domestic sales were down about 5%, but exports rose by about 133%

Anon

EPA-APCD COOPERATION IN VINYL CHLORIDE STUDY BRINGS PRAISE FROM TRAIN
Environews (APCD, Jefferson County, Ky.), pp. 1, 3 (Summer 1974)

A second-phase study of vinyl chloride levels in ambient air near B.F. Goodrich Plant showed average reading to be about 0.5ppm, although one grab sample contained 33.0ppm. Studies continue on effects of VC, determination of safe levels and periods of exposure, effect on people living near plants manufacturing or using VC and PVC.

VINYL CHLORIDE

See: *4-0009 (Asbestos)

4-0015 (Flame Retardants)

Wilson, D.G.
ESTIMATES OF POLLUTION FROM U.S. NONFREIGHT HIGHWAY TRANSPORTATION
Intern. J. Environ. Studies 6 (1): 35-50 (1974)

The potential environmental pollution from automobiles and public transportation is predicted to the year 2000. The contributing effects of the steel, cement, and coal industries are considered. A model is offered for relative transportation costs for a city. A 50% switch of commuters from autos to buses would benefit cities even though it would not markedly change overall resource utilization and pollution.

Anon
NAS STUDY BACKS POLLUTION LIMITS
Sci. News 106 (11), 166 (Sept. 14, 1974)

In general, the one-year study by the National Academy of Sciences on the health effects and cost effects of air pollution supports the air-quality standards established under the Clean Air Act, although caution is sounded about large uncertainties remaining on the extent of health damage caused by pollution, and more extensive studies are seen necessary. Emphasis is on the effects of auto emissions, which may cause 4000 deaths/yr and 4 million lost workdays/yr. Apparent monetary loss from adverse health effects of air pollution ranges from \$500,000/yr to \$3 billion.

Briston, John H. and Katan, Leonard L.
PLASTICS IN CONTACT WITH FOOD
Food Trade Press (Avi), 1974 478pp. \$45

This book covers thermoplastics, their technology and nonplastics components, food quality, health, toxic hazards, and organoleptic effects. Laws and regulations in this country and Europe are also discussed, as are methods of converting plastics raw materials into food-packaging materials. [Review in: Sci. News 106 (11): 173 (Sept. 14, 1974)]

Anon
SCRATCHING THE NICKEL ITCH
Sci. News 106 (11), 169 (Sept. 14, 1974)

Although the intestinal and lung hazards that follow the ingestion or breathing of large quantities of nickel are an accepted fact, the mechanism of the "nickel itch" that follows skin contact has not been well understood. According to S.A. Katz, Rutgers University, nickel tends to "bind" to the skin. Women, who wear costume jewelry or are exposed to nickel coins or clothing fasteners can be subject to a persistent rash.

4-0049

GENERAL INFORMATION

Anon

OIL SPILLS AND LEAKS HAVE CREATED A SYNTHETIC "OIL FIELD"
Chem. Wk. 115 (14): 31 (Oct. 2, 1974)

The New Jersey Dept. of Environmental Protection has sued Exxon and ICI for contributing to a synthetic "oil field" now seeping into the water table of Lower New York Bay. Exxon's Constable Hook petroleum storage and transfer facility is a suspected cause of the leaks; ICI bought "oil field" land from Exxon as a chemical plant site. Under New Jersey law, a company is liable up to \$14 million for cleanup costs. Shell Oil, according to DEP reclaimed and reprocessed for sale the oil that had seeped into ground.

4-0050

GENERAL INFORMATION

Anon

WASHINGTON ROUNDUP: AN FPC ADVISORY PANEL...
Chem. Eng. News 52 (38): 8 (Sept. 23, 1974)

From 1970-1980, approximately 25,000 deaths and 4.5 million excess acute respiratory illnesses may be anticipated in the U.S. from air pollution, according to an FPC advisory panel estimate.

Anon
NEW INSECTICIDE
Wood & Wood Prods. 79 (9): 8 (1974)

Tests with Sevin 4 Oil on moth-infested timber in Idaho showed the experimental insecticide to be almost as effective as DDT. Sevin's price is triple that of DDT, and it breaks down quicker than DDT. In a recent use in the Northwest, DDT was 100% effective. Dr. T.A. Jukes, University of California at Richmond, and others are urging lifting the ban on DDT, which is claimed very safe when properly used.

Turk, Amos, et al, Eds.
HUMAN RESPONSES TO ENVIRONMENTAL ODORS
Academic Press, New York City, 1974. 366pp. \$19.50

Written by experts in the field of odor analysis, this book assesses individual and community responses to odors, and delineates current means of studying olfactory pollution. Among topics discussed: sensory evaluation of odor sources; odor transport, dispersal, and chemical reactions in the atmosphere; odor intensity measurement; and odor annoyance. Sampling techniques and instrumentation for analysis are described. [Review in: Am. J. Pub. Health 64 (10): x (1974)]

Chew, Tsaihwa J. et al
OCCURRENCE OF LEAD IN TUNA
Nature 251 (5471): 159-61 (Sept. 13, 1974)

At a 1972 national conference in the U.S. on baseline studies of pollutants in the marine environment, validity of most published measurements of lead concentration in seawater and marine organisms was questioned. Results reported in Sept. 1973 from an ensuing workshop, sponsored by the National Science Foundation Office for the International Decade of Ocean Exploration (IDOE), confirmed this. A reliable analytical method for determining lead concentrations in tuna fish is now reported. Nevertheless, a problem still exists in evaluating lead pollution in the marine environment. In part, this problem seems to stem from a universal failure to understand the extent, sources and ways to eliminate laboratory lead contamination.

Anon
DYE ECOLOGICAL GROUP OUTLINES OBJECTIVES
Amer. Dyest. Rep. 63 (9): 78, 80 (1974)

The main goals of the Ecological and Toxicological Association of the Dyestuffs Manufacturing Industry (ETAD), Zurich, a recently formed organization, are discussed briefly.

The toxicological subcommittee will concern itself with the acute and long-range effects of dyestuffs in animal experiments, with better toxicological tests methods, and with the effects of dyestuffs on humans. The ecology subcommittee will study the environmental impact of dyestuffs in rivers, seas, oceans; and, among other things, will study methods for the elimination of undesirable products.

A current problem: as of March 1974, the Finnish Industrial Safety Administration ruled that dyestuff producers must prove all azo dyestuffs are non-toxic.

4-0055

GENERAL INFORMATION
(New Compounds)

Kolczynski, J.R. and Harpell, G.A.
AZO INITIATORS FOR CURING UNSATURATED POLYESTERS
Mod. Plast. 51 (9): 102-4, 108, 110 (1974)

New from Lucidol Div., Pennwalt Corp., are nonrefrigerated unsymmetrical t-butylazo initiators reputed to be better than peroxides as cure initiators for unsaturated polyesters. Three compounds currently offered by Lucidol are 2-t-butylazo-2-cyanopropane, 2-t-butylazo-2-cyanobutane, and 1-t-butylazo-1-cyanocyclohexane. Among their advantages: much better pot lives than peroxides and decomposition rates unaffected by additives and impurities.

4-0056

GENERAL INFORMATION
(New Products)

Fine, L. W. et al
N-ACYLIMIDAZOLES...
Soap, Cosmet. Chem. Spec. 50 (7): 42, 44, 46, 48, 55-7 (1974)

A research study directed toward the development of a perborate laundry bleach activator system, not too subject to hydrolysis, unique in structure, and capable of providing an understanding of the activator system started with the study of imidazoles and the family of acylimidazoles known as imidazolides. Structures and reactions of various compounds are discussed.

Anon

EPA SET TO ISSUE PROPOSED PESTICIDE RULES

Chem. Eng. News 52 (38): 19 (Sept. 23, 1974)

EPA expects to issue shortly its proposed regulations for the registration, reregistration, and classification of pesticides. Different criteria obtain for indoor and outdoor residential use and indoor and outdoor nonresidential use. Criteria for determining high risk pesticides include high acute toxicity data and incidence of tumor, teratogenicity, and mutagenicity in test animals. Overriding economic, social, and environmental benefits of proposed uses may allow some high risk pesticides to be registered.

REGULATIONS AND STANDARDS

See: 4-0004 (Arsenic)
4-0006 (Arsenic)
4-0007 (Arsenic)
4-0008 (Arsenic)

5-0001
ARSENIC

Corridan, John P.
HEAD HAIR SAMPLES AS INDICATORS OF ENVIRONMENTAL POLLUTION
Env. Res. 8 (1): 12-16 (1974)

Children attending a rural school in Ireland were exposed to arsenic and mercury from processing operations at a nearby copper/zinc mine. Head hair samples were analyzed for the above metals and results emphasize the importance of human hair examinations as evidence of a hazardous environment. Among the results: high arsenic levels, low lead and mercury levels.

5-0002
ARSENIC

State of Oregon
REGULATIONS RELATING TO WATER QUALITY CONTROL IN OREGON
Dept. of Environmental Quality, 1234 S.W. Morrison St., Portland, Oregon 97205
(June 3, 1974)

Water quality standards for Oregon covering dissolved chemical substances sets. among others, the following limits: arsenic, 0.01 mg/l; boron, 0.5 mg/l

ARSENIC, FLUORINE, SELENIUM DATA
Environ. Rpt. 5 (11): 87 (Oct. 11, 1974)

The U.S. Geological Survey has compiled data on the natural amounts of arsenic, fluorine and selenium as extracted from soils and other surface materials taken at sites throughout the United States. This information includes maps and symbols useful to the environmentalist. Average soil concentrations reported are: arsenic 5.8 ppm; fluorine 180 ppm; and selenium 0.31 ppm.

Ishida, Kohzoh and Braun, Heinz E.
MODIFICATION OF THE GUTZEIT ARSINE GENERATION METHOD FOR IMPROVED RECOVERIES
OF ARSENIC
J. Ass. Offic. Anal. Chem. 57 (5): 1221-3 (Sept. 1974)

A modification of laboratory apparatus used in the Gutzeit Arsine Generation Method for recovery of arsenic in soil provides for controlled addition of the reagent (hydrochloric acid) followed by a slower rate of arsine gas formation, resulting in greater reproducibility.

Anon

A NEW HEALTH STANDARD FOR ARSENIC...

Chem. Eng. 8 (21): 51 (Oct. 14, 1974)

The Occupational Health and Safety Administration is expected to issue a new health standard for arsenic by mid-November. Disagreement among Industry members as to its cancer-causing potential and pressure from Labor unions for "no measurable quantities allowed" may influence the level as recommended by NIOSH -- 0.05 mg/m³. No laboratory animal has yet been found that develops cancer on exposure to arsenic thereby limiting investigative work.

Monsanto Industrial Chemicals Co.
FIRE RETARDANT PLASTICIZERS - RESIN MODIFIERS
Monsanto Bulletin IC/PL-358 revised July 1, 1974

Discusses application areas in vinyl systems, urethane, rubber, adhesives, etc. Includes product descriptions, compatibility chart, and physical property chart. Flame retardants discussed include 2-ethylhexyl diphenyl phosphate, alkyl aryl phosphate, isodecyl diphenyl phosphate, triphenyl phosphate, chlorinated organic/phosphorus compounds, and tributyl phosphate/tributoxyethyl phosphate.

Blejer, Hector P. and Arlon, Robert
TALK: A POSSIBLE OCCUPATIONAL AND ENVIRONMENTAL CARCINOGEN
J. Occup. Med. 15 (2): 92-7 (1973)

A review (with 26 refs.) of possible toxic effects of mineral talc deposits containing asbestos. The toxic effects of the various talc and asbestos forms are discussed.

Anon
CANCER IN ASBESTOS WORKERS' FAMILIES
Science News 106 (14): 204 (Oct. 5, 1974)

Studies at Mt. Sinai Medical Center under Dr. Irving Selikoff have provided evidence that tiny quantities of asbestos dust carried home by asbestos workers on their clothing and in the hair can produce lung abnormalities among relatives and malignancy in persons exposed as children. Current cases were probably the result of exposure in the 1940's and 1950's.

Anon

RESEARCH UNDERWAY ON TOXIC CHEMICALS NAMED BY EPA
Environ. Sci. Technol. 8 (10): 871-874 (1974)

Carbon adsorption studies on polychlorinated biphenyls and seven other chemicals, listed as toxic in EPA's effluent standards, indicated that these chemicals can be removed from waste streams with granular activated carbon. No tests were made on benzidine, however, because of its classification as a carcinogen. Benzidine appears to be adsorbable because of its molecular weight and chemical structure.

BORON

See: 5-0002, Arsenic

See also: 5-0018, Flame Retardants

Hoch-Liget1, Cornelia et al

ONCOGENIC ACTIVITY OF AN m-DIOXANE DERIVATIVE: 2,6-DIMETHYL-m-dioxan-4-ol
ACETATE (DIMETHOXANE)

J. Nat. Cancer Inst. 53 (3): (Sept. 1974)

Carefully contributed experiments using young-adult male Wistar rats were conducted to investigate the tumor producing activity of an m-dioxane derivative, known as Dimethoxane and Dioxin, which is a broad spectrum antimicrobial agent of low toxicity. The compound was administered orally in the drinking water. In the 25 rats studied, 14 tumors were found, 8 of which were liver tumors.

Previous studies showed that dioxane (i.e., p-dioxane) had a weak to moderate onco_genic activity toward the liver of the rat, caused kidney tumors, epidermoid cancers in rat nasal cavities, and tumor-like lesions in the lungs of guinea pigs. Mention is made of difference in structure of dioxanes versus ethyleneimines and beta-propiolactone.

Freeland, Graeme N. et al
ADSORPTION OF MERCURY FROM AQUEOUS SOLUTIONS BY POLYETHYLENIMINE-MODIFIED WOOL
FIBERS

Environ. Sci. Technol. Technol. 8 (10): 943-4 (1974)

Previous studies indicated that protein fibers can absorb mercury from solution and raised the possibility of using them in effluent purification processes or for clinical purposes. This report shows that the adsorptive capacity of wool for mercury (Hg^2) is substantially increased by polymerization of ethyleneimine onto the fibers.

ETHYLENEIMINE

See: 5-0010, Dioxane

5-0012
FLAME RETARDANTS

Eisenberg, B.J. and Weil, E.D.
A NEW DURABLE FLAME RETARDANT FOR CELLULOSICS
Text. Chem. Color. 6 (8): 180/35-180/37 (1974)

FYROL 76, a new flame retardant finish for cellulosic fabrics, lends itself to very rapid cure and does not require special equipment. Retardancy properties endure through repeated laundry and dry cleaning.

5-0013
FLAME RETARDANTS

St. Mard, Hubert H.
FLAME RETARDANT COTTON/MODACRYLIC BLEND FABRICS
Abstract of Paper presented at 1974 AATCC National Technical Conference,
Braniff Place, New Orleans, Oct. 9-11, 1974

Increased flame retardancy was imparted to fabrics and fiber pads, made from blends of cotton and modacrylic fibers, by the addition of antimony oxide in an N-methylol resin formulation. Retardancy was durable to laundry bleaching and weathering.

5-0014
FLAME RETARDANTS

Swihart, Terence J.

POLYSILOXANES AS FLAME RETARDANTS

Abstract of Paper presented at 1974 AATCC National Technical Conference,
Braniff Place, New Orleans, Oct. 9-11, 1974

Oxygen index test figures will be presented on the flame-retardant properties of silicones on Nomex, Durette, Kynol, PBI and cotton. Data on P-N containing silicones for retardants on cottons are included in this report.

5-0015
FLAME RETARDANTS

Le Blanc, R. Bruce

NEW PHOSPHOR AMIDE DERIVATIVES AS FLAME RETARDANTS FOR COTTON TEXTILES

Abstract of Paper presented at 1974 AATCC National Technical Conference,
Braniff Place, New Orleans, Oct. 9-11, 1974

Methylolated pentamethylphosphorotriamide used in conjunction with triazine resins imparts fire retardancy properties to cottons.

5-0016
FLAME RETARDANTS

Bartinger, William F.

THE APPLICATION OF A PHOSPHONIUM SALT FLAME RETARDANT TO POLYESTER/COTTON
BLEND FABRICS

Abstract of paper presented at 1974 AATCC National Technical Conference, Braniff
Place, New Orleans, Oct. 9-11, 1974

The effect of a phosphonium salt combined with urea, or the salt in the
presence of bromine topically applied or part of the polyester, shows
these chemicals to be technically feasible for use on polyester/cotton
fabrics as flame retardants.

5-0017
FLAME RETARDANTS

Roth, Philip B.

WATER AND FLAME RESISTANT TENTING FABRIC

Abstract of paper presented at 1974 AATCC National Technical Conference,
Braniff Place, New Orleans, Oct. 9-11, 1974

Tenting fabric resulting from cotton treated with a phosphine based flame
retardant and a compatible resin based water repellent, can meet proposed
industry standards for flammability.

5-0018
FLAME RETARDANTS

Feeves, Wilson A., Chairman
1974 AATCC NATIONAL TECHNICAL CONFERENCE, Braniff Place, New Orleans,
Oct. 9-11, 1974
Text. Chem. Color. 6 (9): 54-74 (1974)

Abstracts of papers presented at this meeting are included. Of interest are papers on flame retardants for textiles; ecology related to the textile industry; the developing uses of radiation in industry including its use for fixation of flame retardants.

A paper, presented by N.B. Knoepfler, on the "Storage stability of boron treated cotton batting products that meet mattress flammability standard FF4-72," states that the borates are the only chemical systems that yield cotton batting for mattresses that pass the standard.

Among the flame retardants mentioned are: THPOH-NH₃, THPOH-Amide, Pyrovatex, and THPC-Urea. (See also: Refs. 5-0012 thru 5-0017 and 5-0054, 5-0055, 5-0056)

5-0019
FLAME RETARDANTS

Mulcahy, M.F.R. and Warren, D.R.
HAZARDS FROM COMBUSTIBLE MATERIALS. A SYMPOSIUM
Melbourne, Victoria, Australia, 8 April 1974.

A brief review of a symposium concerned mainly with the nature and extent of the hazards associated with combustible materials; the fire properties of materials based on natural or synthetic polymers, chiefly building materials and textiles; and chemical investigations of the combustion behavior of polymeric materials.

One speaker referring to tests for studying smoke generation reported that adding "fire retardant" chemicals to rigid polyurethanes increases smoke production under flaming but decreases it under smoldering conditions.

An investigation of halogenated and non-halogenated phosphorus esters by the oxygen index method and by thermal degradation of the polymers in nitrogen and air indicated that these retardants function chiefly by promoting melting and dripping of the polymer; certain brominated compounds inhibit flame reactions by releasing hydrogen bromide in the gas phase. [Review in: Combust. Flame 23 (1), 136-8 (Aug. 1974)]

Friston, Robert M. (Reviewer)

AN APPRAISAL OF HALOGENATED FIRE EXTINGUISHING AGENTS

Proc. of a Symposium, April 11-12, 1972.

Committee on Fire Research and Committee on Toxicology of the National Research Council, National Academy of Sciences, Wash., D.C., 1972. 349pp. \$5.50

Halogenated fire extinguishing agents, whose action against fires is chemical rather than physical, are much more effective than such physical agents as carbon dioxide and water, but they present special hazards. Earlier ones, e.g., carbon tetrachloride, are toxic and the newer ones, e.g., trifluorobromomethylbromide and tetrafluoromethane, induce heart irregularities in dogs and may be dangerous for people, particularly people with cardiac problems. Also, the pyrolysis products of all agents in this class are toxic. Thirty authors presented varying views but reached no consensus. Care must be taken to use these agents properly to avoid hazards.

FLAME RETARDANTS

See: *5-0006, Aryl Phosphates

Quimby, Kelvin L. et al
ENDURING LEARNING DEFICITS AND CEREBRAL SYNAPTIC MALFORMATION FROM EXPOSURE TO 10
PARTS OF HALOTHANE PER MILLION
Science 185 (4151): 625-7 (Aug. 16, 1974)

Young rats exposed to 10 ppm of haloethane throughout the period of major growth showed learning deficits at a later period. Tissue samples from the cerebral cortex showed evidence of neural degeneration. Adult rats exposed to the same concentration showed no effect.

Anon
HAIRSPRAY
Aerosol Age 19 (9): 11,46 (1974)

Petitioners to the Consumer Product Safety Commission seeking an investigation on the safety and toxicity of aerosol spray products used in the home cited as evidence of toxicity of aerosol sprays a report by Drs. E. Zuskin and A. Bouhuys [New England J. Med. (Mar. 21, 1974)]. This commentary "refutes" the claim of the petitioners by quoting from the cited paper to show that the authors were misquoted. Zuskin and Bouhuys in their article, "Acute Airway Responses to Hair-spray Preparations," observed "significant decreases of maximum expiratory flow rates at low lung volumes in healthy men and women," but could not conclude that chronic airway obstruction could be assumed. They mentioned as open to dispute the possibility of hair spray preparations causing lung disease.

Anon

FLUOROCARBONS AND OZONE: NEW PREDICTIONS OMINOUS

Science News 106 (14): 212-3 (Oct. 5, 1974)

Atmospheric scientists, M.B. McElroy, S.C. Wofsy, and N.D. Sze of Harvard will soon publish the results of six conceptual models used to study future world production of fluorocarbons, indicating an even greater decrease of the ozone layer by fluorocarbons than previously predicted by Cicerone et al. McElroy cautions, however, that their models are only "models" and he emphasizes the urgent need for expanded research on the subject.

FLUOROCARBONS

See: 5-0017, Flame Retardants

5-0020, Flame Retardants

See also: 5-0059, General Information

Anon

BCME UNDER FIRE

Chem. Wk. 115 (15): 19 (Oct. 9, 1974)

Fifteen employees of Rohm and Haas, Philadelphia, have been victims of lung cancer over the past 12 years. Ralph Nader's Health Research Group charges that this resulted from their exposure to bis-chloromethyl ether which OSHA lists as a carcinogen.

5-0025
HALOETHERS

Anon

CONCERN GROWS OVER WORKER CANCER RISK

Chem. Eng. News 52 (41): 5 (Oct. 14, 1974)

This report of Ralph Nader's charges that Rohm and Haas Co. withheld data on lung cancer among its workers states that 22 workers at the firm's Philadelphia plant died of lung cancer, apparently caused by bis-chloromethyl ether. Other data indicate workers may died from chloromethyl methyl ether exposure. It further states that Dow Chemical has learned from Prof. P.L. Viola of Regins Elena Institute for Cancer Research, Rome, Italy, that vinylidene chloride may cause liver cancer in rats. Preliminary findings, at least, show the compound to be carcinogenic to rats in inhalation studies in concentrations of 100 to 200 ppm in air. Dow has passed on the findings to U.S. regulatory agencies, while reporting that its own, unfinished studies of vinylidene chloride show no evidence of toxicity. Dow workers are exposed to less than 10ppm of the chemical.

Van Duuren, B.L. et al
CARCINOGENIC ACTIVITY OF ALKYLATING AGENTS
J. Nat. Cancer Inst. 53 (3): 695-700 (Sept. 1974)

Seventeen chemical compounds, chloro-ethers and other alkylating agents, were tested on female Swiss mice. They were given topically, subcutaneously or intraperitoneally. Only 2 of these compounds induced sarcomas upon application to the skin. Four of the 15 others induced significant incidences at the sc injection site. Dimethylcarbonyl chloride induced a high incidence of sarcomas under any method of administration.

Consolidation Coal Co.

CONSOL SYNTHETIC FUEL PROCESS DEVELOPMENT. MONTHLY PROGRESS REPORTS NUMBERS 78 THROUGH 116.

Consolidation Coal Co., Library, Pa. Research Div. Monthly Reports, Jan. 1970-March 1973. PB-233 261. July 1974. 219 pp. (Contract DI-14-01-0001-310).

These monthly reports (Jan 70 to Mar 73) trace the progress of the development of the Consol Sythetic Fuel (CSF) process by the Consolidation Coal Company under contract to the Office of Coal Research. The process, tested for nearly three years in a pilot plant at Cresap, West Virginia, involves the partial conversion of coal into an extract and a byproduct solid residue, followed by hydrogenation of the extract to yield a synthetic crude. Most of the development work--carried out under the code name 'Project Gasoline'--applied to caking, high-sulfur Eastern coals. [Abstract in: Govt. Repts. Announc. 74 (17): 57 (Aug. 23, 1974)] Earlier reports available as PB-233 259 and PB-233 260

FMC Corp.

CHAR OIL ENERGY DEVELOPMENT MONTHLY REPORTS NUMBERS 27 THROUGH 32

FMC Corp., Princeton, N.J. Chemical Res. and Devl. Center. Monthly Reports, Nov. 1973-April 1974. PB-233 268. Nov. 1974. 364 pp. (Contract DI-14-32-0001-1212)

These monthly reports (Nov 73-Apr 74) trace the progress of the development of the COED (char-oil-energy-development) process--from bench scale to pilot plant operations at Princeton, New Jersey--by the FMC Corporation under contract 14-01-0011-1212 to the Office of Coal Research. Under development since 1962, the COED process converts coal to low-sulfur synthetic crude oil, gas, and char by the fluidized-bed pyrolysis of coal, followed by the hydrotreating of the coal oil to synthetic crude oil. The char can be gasified to give a clean fuel gas for power generation, thus reopening the potential of using high sulfur coals for power generation. Successful operation of a 100-pound-per-hour process development unit led to the design, construction and operation of a pilot plant at Princeton. The pilot plant can process 36 tons of coal per day and hydrotreat 30 barrels of coal-derived oil daily. [Abstract in: Govt. Repts. Announc. 74 (17): 57 (Aug. 23, 1974)] Earlier reports available as PB-233 262 through PB-233 267

5-0029
LIQUEFACTION AND GASIFICATION OF COAL

Pittsburgh and Midway Coal Mining Co.
SOLVENT REFINED COAL (SRC) PROCESS
Pittsburgh and Midway Coal Mining Co., Kansas City, Mo. Monthly Reports, Jan-March 1974. PB-233288. March 1974, 164 pp. (Contract DI-14-01-0001-496)

These monthly reports trace the progress of the Solvent Refined Coal (SRC) process developed by The Pittsburg and Midway Coal Mining Co. under contract to the Office of Coal Research since 1966. The process will undergo testing in a pilot plant recently completed near Tacoma, Washington, at a cost of \$18 million. In the SRC process, coal is first dissolved under moderate hydrogen pressure in a heavy aromatic solvent derived from the process. The resultant coal solution is filtered to remove ash and a small amount of insoluble organic material and fractionated to recover the solvent. The main product from the process is a heavy organic material called solvent refined coal. Smaller quantities of hydrocarbon gases and light distillate liquids are also produced. [Abstract in: Govt. Rept. Announc. 74 (17): 59 (Aug. 23, 1974)] Earlier reports available as PB-233277 as PB-233277 through PB-233287

5-0030
LIQUEFACTION AND GASIFICATION OF COAL

Wu, W.R.K. and Storch, H.H.
HYDROGENATION OF COAL AND TAR
Bureau of Mines-B-633, PB-233396. 1968, 204pp

This bulletin traces the development of high-pressure coal and tar hydrogenation technology, based on an intensive review of the pertinent literature. The bulletin was written as part of the Bureau of Mines research program on synthetic liquid fuels. It covers the history and economics of the process; the chemical aspect of hydrogenation of coal, tar, and middle oil; the engineering aspect of converting coal and tar to liquid fuels, principally gasoline; and the equipment for the process. The literature covered includes documents of the United States and British Governments, journals, and other publications. Bureau results in the hydrogenation field are also incorporated. [Abstract in: Govt. Rept. Announc. 74 (17): 59 (Aug. 23, 1974)]

5-0031
LIQUEFACTION AND GASIFICATION OF COAL

Katz, Donald L. et al
EVALUATION OF COAL CONVERSION PROCESSES TO PROVIDE CLEAN FUELS. PART I.
Electric Power Res. Inst., Palo Alto, Calif. Final Report, Nov. 1973-Feb. 1974.
EPRI-206-0-0-1. PB-234 202. Feb. 1974. 78 pp.

The goals of the project were to investigate the ongoing research and development programs on coal conversion to clean fuels and coal utilization in environmentally acceptable ways for electric power generation, and recommend to EPRI those processes whose development warrants acceleration through EPRI's support. The conduct of the investigation is described with some general concepts and observations made during the seven month study. Part I contains the choices and recommendations for research support by EPRI. Those processes which seem to have the best prerequisites for providing clean fuels from coal at the earliest dates were delineated. The bases for the reasoning behind the choices are given. Coal beneficiation, gasification, liquefaction and fluidized bed combustion were compared and evaluated with regard to their potential integration into the electric power industry. [Abstract in: Govt. Rep. Announc. 74(17): 153 (Aug. 23, 1974)]

5-0032
LIQUEFACTION AND GASIFICATION OF COAL

Katz, Donald L. et al
EVALUATION OF COAL CONVERSION PROCESSES TO PROVIDE CLEAN FUELS. PART II.
Electric Power Res. Inst., Palo Alto, Calif. Final Report, Nov. 1973-Feb. 1974.
EPRI-206-0-0-1. PB-234 203. Feb. 1974. 410 pp

A review is made of six general methods of coal utilization with elimination of the sulfur prior to or during combustion in an electric power generating plant: fluidized bed combustion, coal beneficiation, pyrolysis, coal gasification, coal dissolution and liquefaction, in situ combustion. The processes in each category were reviewed, analyzed and evaluated. Critical process steps, where additional research must be done before the process can be considered at the commercial stage of development, were identified. The advantages and disadvantages of 37 processes were identified. Also included are discussions of combined cycle systems, economics, retrofit capabilities, thermodynamics and coal slurry pipelines. These topics give perspective to the general subject of coal use. (Modified author abstract) [Abstract in: Govt. Rep. Announc. 74 (17): 153 (Aug. 23, 1974)]

LIQUEFACTION AND GASIFICATION OF COAL

Armbruster, Frank et al

POLICY ANALYSIS FOR COAL DEVELOPMENT AT A WARTIME URGENCY LEVEL TO MEET THE GOALS OF PROJECT INDEPENDENCE.

Hudson Inst., Inc., Croton-on-Hudson, N.Y. Final Rept.. Nov. 1973-Jan. 1974.
PB-234 037. Feb. 1974. (Contract DI-14-32-0001-1528)

The report presents viewpoints on coal's possible role for increased development and use in the Nation's energy future under a wartime-urgency program. Coal production up to the level of 1.8-2.2 billion tons per year by 1985 is advanced as a major force to keep energy relatively cheap while meeting the goals of Project Independence 1980. The report contains suggestions that may be applied to energy producing producing and consuming sectors in a wartime urgency mode. These include increasing the Federal research and development efforts in gasification and liquefaction of all types of domestic coals and expanding use of anthracite and low sulfur Appalachian coals. [Abstract in: Govt. Rep. Announc. 74 (19): 84 (Sept. 20, 1974)]

LIQUEFACTION AND GASIFICATION OF COAL

Anon

PIPELINES/ENVIRONMENT

Environ. Rept. 5 (11): 84 (Oct. 11, 1974)

Two new pipelines proposed to transport natural gas from Alaska's North Slope to Canada and the U.S. would increase the risks of damage which environmentalists fear from the Alaskan oil pipeline, now under construction. A further possible environmental problem is the need for liquefaction plants near the southern ports to convert the transported gas into liquid natural gas, with their cooling facilities and service and worker facilities.

Anon

THINGS ARE FINALLY LOOKING UP FOR THE MUCH-PLAGUED COAL-GASIFICATION PILOT PLANT. . .
Chem. Eng. 81 (21): 49 (Oct. 14, 1974)

Consolidated Coal's CO₂ Acceptor Process for the production of gas from coal has had several successful pilot plant runs producing 1.37 million ft³ of 400 Btu/ft³ gas from a ten-day run. It utilizes feed of 30 tons/d of lignite. Enrichment of the gasifier output to 950 Btu/ft³ will be done via a methanation unit which is nearing completion. The facility at Rapid City, S.D., is managed by Conoco Coal Development Co. under contract to the U.S. Office of Coal Research and the American Gas Assn.

Aubert, M. et al
USE OF A NERITIC-TYPE TROPHODYNAMIC CHAIN WITH MOLLUSKS FOR THE STUDY OF THE
TRANSFER OF METALLIC POLLUTANTS
Institut National de la Sante et de la Recherche Medicale (Inserm), 06-Nice
(France). Centre d'Etudes et de Recherches Medicales de Biologie et d'Océanographie
Medicale (Cerbom). Cea Centre d'Etudes Nucleaires de Fontenay-aux-Roses, 92 (France)
CEA-CONF-2500. 1973, 26pp. CONF-7309103-1. (In French).

From sixth international symposium of medical oceanography; Portoros, Yugoslavia.
Covers health hazards of copper ions, chromium ions and other metallic pollutants;
biological effects on mollusks, toxicity, water pollution.
[Abstr. in: Govt. Repts. Announc. 74 (18): 43 (Sept. 6, 1974); NSA 40 02,
Number 05755]

Steele, John H.
THE STRUCTURE OF MARINE ECOSYSTEMS
Blackwell Scientific, Oxford and London, 1974. 128+pp.

This book presents the author's mathematical simulation of the pelagic ecosystem
in the northern North Sea as typical of open sea environments in temperate or
sub-arctic waters. It offers discussion points for the differences between
terrestrial and marine ecosystems, or the significance of ecologists' icons such
as diversity, stability, efficiency, food webs and food chains. The author con-
siders the levels of pelagic herbivores and benthic micro-organisms to be the
most critical parts of marine ecosystems and urges further research on the struc-
ture and dynamics of these "lower levels" of the system. [Review in: Nature 250
(5465): 448 (Aug. 2, 1974)]

Cleasby, J.L. et al
TRICKLING FILTRATION OF A WASTE CONTAINING NTA
J. Water Pollut. Contr. Fed. 46 (8): 1873-87 (1974)

Investigation of the effect of nitriolotriacetic acid (NTA) on a pilot plant trickling filter showed that filter performance was not affected by this compound, that NTA was substantially removed by the filter, and that it had no significant effect on heavy metals passing through the filter.

Anon

U.S. FIRMS CONTINUE TO MAKE DEALS ON TECHNOLOGY WITH THE SOVIET UNION
Chem. Eng. News 52 (41), 4 (Oct. 14, 1974)

Technical cooperation agreements have been made between U.S. firms and the USSR. Bendix and Gulf Oil are 2 of the companies. Reichold Chemicals has included licensing in their agreements. Hilton-Davis Chemical Div. of Sterling Drug will supply technology for a \$25 million plant in the USSR to produce fluorescent whitening agents for use in detergents, paper, and textiles.

Kevy, Sherwin V. et al

TOXICOLOGY OF PLASTIC DEVICES HAVING CONTACT WITH BLOOD

Children's Hospital Medical Center, Boston, Mass. Annual Report, Sept. 1973-18 June 1974. PB-233857, 21 June 1974. 52pp. (NIH/NHLI-72-2969).

Continued studies are presented that evaluate the possible toxicological effect of DI-2-ethylhexyl phthalate (DEHP) extracted from poly-vinyl chloride (PVC) plastic by blood and biologic fluids. Specific studies are outlined in four areas: The preparation of an antibody to phthalate in rabbits for use in immuno-fluorescent studies and a radioimmunoassay for detection of phthalate; bi-weekly platelet transfusions after storage for 48 hours at 4 and 22C in PVC, polyethylene and siliconized glass is a natural and clinically oriented method of phthalate administration; evaluation of these animals for hepatic, splenic and pulmonary functions by means of nuclear medicine techniques, liver function tests and compartmental BSP analysis; tissue analysis of transfused and nontransfused patients for DEHP; and quantitative analysis of liver tissue for DEHP of multi-transfused Rhesus monkeys. [Govt. Repts. Announc. 74 (19), 47 (Sept. 20, 1974)]

Rybny, C.B. et al
ULTRAVIOLET RADIATION CURED COATINGS
J. Paint Technol. 46 (596): 60-9 (Sept. 1974)

Several UV radiation curable polymers synthesized from multifunctional acrylates and an unsaturated resin were used in coating mixtures prepared with a photo-initiator. Of the various polyacrylates tested in UV cured coatings, acrylated polyester-based urethanes showed the highest level of performance.

5-0042
beta-PROPIOLACTONE

Jerina, D.M. and Daly, J.W.
ARENE OXIDES: A NEW ASPECT OF DRUG METABOLISM
Science 185 (4151): 573-82 (Aug. 16, 1974)

Metabolic formation of arene oxides explains many toxic and carcinogenic properties of aromatic hydrocarbons. A variety of chemical compounds are discussed, including certain carcinogenic compounds, such as β -propiolactone, which are presumed to act by direct acylation or alkylation of certain intracellular components.

beta-PROPIOLACTONE

See: 5-0010, Dioxane

5-0043

SHALE OIL EXTRACTION AND REFINING

Pforzheimer, H.

PARAHO--NEW PROSPECTS FOR OIL SHALE

Chem. Eng. Prog. 70 (9): 62-5 (1974)

At the U.S. BuMinas Oil Shale Experiment Station, Colorado, extensive research and development effort is being privately financed. Substantial reserves, enough for a 1.5 million bbl/day oil shale industry for 100 years, make the project most attractive. Results of the program and study will be reported to the government early in 1976.

5-0044

SHALE OIL EXTRACTION AND REFINING

Humphreys, R.D.

OIL FROM ALBERTA'S OIL SANDS

Chem. Eng. Prog. 70 (9): 66-70 (1974)

Canada's tar sands could yield 300 billion barrels of oil. Development has proved costly and many companies discontinued work on extraction. Great Canada Oil Sands, Ltd., is still active and could achieve commercial production by 1980.

5-0045
SHALE OIL EXTRACTION AND REFINING

Anon

OIL SHALE: A MAJOR U.S. FOSSIL FUEL RESOURCE
Combustion 46 (3): 12-16 (Sept. 1974)

Review of oil shale deposits in U.S., past and current activities of the Institute of Gas Technology (IGT), and brief discussion of the economics of producing gas or oil from shale.

5-0046
SHALE OIL EXTRACTION AND REFINING

Anon

COLONY MOVE CLOUDS SHALE OIL PROSPECTS
Chem. Eng. News 52 (41): 4-5 (Oct. 14, 1974)

Colony Development Operation has suspended construction of its Colorado shale processing plant for reasons of tight money, unclear national energy policy, etc. Sohio, Paraho and other competitors, while gloomy over this move, apparently still intend to pursue their operations at this time.

SHALE OIL EXTRACTION AND REFINING

See also: 5-0064, General Information

5-0047
VINYL CHLORIDE

Anon
ACTIVATED CARBON EFFECTIVE FOR REMOVING VCM
Environ. Sci. Technol. 8 (10): 872 (1974)

Studies indicate that activated carbon can remove essentially 100% of the vinyl chloride monomer in air until breakthrough occurs, at which time over 90% of the carbon bed is saturated with VCM. A simplified schematic of typical adsorption system arrangement for removal of VCM in PVC manufacturing plants is included.

5-0048
VINYL CHLORIDE

Weaver, Paul H.
ON THE HORNS OF THE VINYL CHLORIDE DILEMMA
Fortune 90 (4): 150-3, 200, 202-4 (Oct. 1974)

OSHA's decisions concerning limits of worker exposure to vinyl chloride may affect the stability of those companies manufacturing vinyl plastics. This is the first big test case in which a government regulating agency (OSHA) will have to balance jobs for workers against health hazards and higher costs.

Anon

A DEAL INVOLVING VINYL CHLORIDE SUPPLIES.....

Chem. Eng. News 52 (40): 6 (Oct. 7, 1974)

Norsk Hydro of Norway has contracted with Continental Oil to provide vinyl chloride monomer for Norsk's new plant at Rafnes, Norway. Norsk Hydro will return prepared products to Conoco.

5-0050
VINYL CHLORIDE

Filatova, V.S. and Antonyuzhenko, V.A.

DYNAMICS OF HYGIENIC WORKING CONDITIONS AND OCCUPATIONAL DISEASE INCIDENCE AMONG WORKERS IN SUSPENSION POLYVINYL CHLORIDE PRODUCTION OVER A NUMBER OF YEARS

Gigiena Truda i Professionalnye Zaboлевaniya (USSR) 15 (4): 32-4 (1971).

Translation, PB-233614. July 1974. (NIH-74-352C)

The occupational disease incidence in workers resulting from vinyl chloride air pollution was studied over a period of 17 years (1953-1969). Although industrial conditions have improved, there still occurs new cases of chronic occupational poisoning. Various clinical manifestations of chronic vinyl chloride poisoning, as a function of environmental air pollution have been established. A series of measures designed to improve air quality in work areas is suggested. [Abstr. in: Govt. Repts. Announc. 74(18): 46 (Sept. 6, 1974)]

5-0051
VINYL CHLORIDE

Anon

BAN VC IN AEROSOLS

Soap, Cosmet. Chem. Spec. 50 (9): 81 (1974)

Consumer Product Safety Commission in mid-August banned as a health hazard the use of vinyl chloride as an aerosol spray propellant because of the reported carcinogenic effects of VC. The ban covers primarily spray paints and paint removers, protective and decorative coatings, adhesives and solvents.

5-0052
VINYL CHLORIDE

OSHA, Dept. of Labor

EXPOSURE TO VINYL CHLORIDE. OCCUPATIONAL SAFETY AND HEALTH STANDARDS
Fed. Reg. 39 (194): 35890-8 (Oct. 4, 1974)

OSHA's standard for exposure to vinyl chloride is presented.

Anon
OSHA's RULES SPUR SUITS
Chem. Wk. 115 (15): 14 (Oct. 9, 1974)

OSHA's final standards for worker exposure to vinyl chloride are announced with repercussions from industry and labor unions. Difficulty in attaining the low limits, problems of reliance on respirators cited. One company initiating legal action to block OSHA regulations is Dow Chemical, but the company also claims that its PVC pipe fabricating plants will meet new standards and announces expansion of its Freeport, Texas, resin plant to 150-million-lbs/yr.

VINYL CHLORIDE

See: *5-0040, Phthalates

VINYLDENE CHLORIDE

See: 5-0025, Haloethers

Salvin, Victor S.

THE YELLOWING OF WHITE FABRICS DUE TO AIR POLLUTANTS

Abstract of paper presented at 1974 AATCC National Technical Conference,
Braniff Place, New Orleans, Oct. 9-11, 1974

Oxides of nitrogen from atmospheric pollutants will yellow most white fabrics. With the exception of Spandex, they become yellow from the interaction of additives, e.g., optical brighteners, cationic softeners, and antistats, with the fiber. Two test methods for determining yellowing are outlined.

Neely, W. Brock

DIPHENYL OXIDE: A DYE CARRIER THAT MEETS ENVIRONMENTAL AND TOXICOLOGICAL STANDARDS

Abstract of paper presented at 1974 AATCC National Technical Conference, Braniff Place, New Orleans, Oct. 9-11, 1974

Dow Chemical Co. has established through a comprehensive environmental and toxicological study that diphenyl oxide, when used in the proper manner, will have minimal effect on the environment. Data demonstrated that the compound meets OSHA and EPA standards.

Todd, A.S.

ENVIRONMENTAL CONSIDERATIONS CONCERNING THE SELECTION OF DYE CARRIER SOLVENTS

Abstract of paper presented at 1974 AATCC National Technical Conference,
Braniff Place, New Orleans, Oct. 9-11, 1974

In this study various type solvents (including oxygenated and chlorinated hydrocarbons, coal-tar derived and petroleum derived hydrocarbons) used as dye carriers exhibited substantial differences in water solubility, fish toxicity, biodegradation, vapor pressure, etc., which would affect their pollution potential. [Abstract in: Text. Chem. Color 6 (9): 74 (1974)]

Baglan, R.J. et al

UTILITY OF PLACENTAL TISSUE AS AN INDICATOR OF TRACE ELEMENT EXPOSURE TO ADULT AND FETUS

Environ. Res. 8 (1): 64-70 (Aug. 1974)

A Vanderbilt University Research team found high levels of Hg, Pb, and Cd in human placentas. Mercury, selenium, cobalt, and rubidium were found in the blood of the fetus and the mother at levels which correlated with placenta levels. Specific infant diseases and malformations were studied with regard to effects of these trace elements. [Also available as Report ORO-2401-80 through AEC/contractor channels, or at \$4 from NTIS (Environ. Rept. 5 (11): 87 (Oct. 11, 1974)]

Gillette, Robert
PLUTONIUM (II): WATCHING AND WAITING FOR ADVERSE EFFECTS
Science 185 (4157): 1140-3 (Sept. 27, 1974)

This second and last part of this article mainly describes the activities of the AEC's United States Transuranium Registry, established as a medical data bank to monitor the health of workers exposed to plutonium. Animal studies have shown plutonium to be a potent carcinogen; effects of small internal doses on exposed workers are still uncertain.

Questioned now is whether the current occupational standards for plutonium, set in 1949, are still adequate.

Weinberg, Janet H.
BLOODLESS AND BREATHLESS
Science News 106 (12): 202-3 (Sept. 28, 1974)

In 1966, Leland Clark discovered that rats could breathe, when submersed in silicone oil. Later, similar results were noted with fluorochemicals, e.g., perfluorodecalin. Then, the fluorochemicals were successfully tested as "synthetic red blood cells; fluorochemical emulsions gave more successful results. No carcinogenic effects have yet been noted in test animals. Silicone oil must contain 20% oxygen.

Anon
VITAMIN E RETARDS CELLULAR AGING
Science News 106 (12): 199 (Sept. 28, 1974)

Scientists, Lester Packer and James R. Smith at Lawrence Berkeley Laboratory have been able to extend the life of human embryonic lung cells to more than double by the addition of Vitamin E to the cells in culture. These cells were remarkably resistant to environmental stress. Researchers believe Vitamin E will extend the life of humans subjected to severe environmental pollution.

Jones, Philip H. et al
BIODEGRADABILITY OF PHOTODEGRADED POLYMERS. I. DEVELOPMENT OF EXPERIMENTAL PROCEDURES
Environ. Sci. Technol. 8 (10): 919-23 (1974)

Test methods used in studying biological oxidation of photodegraded plastic fragments employed a modification of the conventional Warburg apparatus to measure O₂ consumption. Investigated in natural soils and sewage sludge, degraded polyethylene and polypropylene were biologically oxidized in both mediums. Degraded polystyrene appeared to be more resistant to biodegradation.

Guillet, James E. et al
BIODEGRADABILITY OF PHOTODEGRADED POLYMERS II. TRACER STUDIES OF BIOOXIDATION
OF ECOLYTE PS POLYSTYRENE
Environ. Sci. Technol. 8 (10): 923-5 (1974)

A radioactive tracer technique was used for examination of the biological oxidation of a photodegraded copolymer, polystyrene-vinyl ketone. The photodegraded copolymer was considerably more biodegradable than the copolymer without photodegradation. Tests were carried out in soil and in activated sludge.

Flinn, James E. and Reimers, Robert S.
DEVELOPMENT OF PREDICTIONS OF FUTURE POLLUTION PROBLEMS
Battelle Columbus Labs., Ohio. PB-233117. March 1974. 222pp.
(Contract EPA-68-01-1837)

The report describes the results of a program to identify, rank and project short- and intermediate-term future pollution problems. Identification was accomplished using three independent search approaches based on industrial production, environmental, and societal trends and activity. Nine ranking factors were devised to select ten most serious problems from the initial list. The factors included: persistence; mobility/pervasiveness; environmental, technological, social, and political complexity; physiological risk; research needs; and bulk or volume of the pollutant. The ten selected problems in rank order are as follows: Impacts of new energy initiatives; geophysical modifications of the earth; trace element (metal) contaminants; proliferating hazardous and toxic chemicals; emissions from new automobile fuels, additives, and control devices; disposal of waste sludges, liquids and solid residues; critical radiation problems; fine particulates; expanding drinking water contamination; and irrigation practices. Five to ten year projections were made of the ten problems which resulted. [Abstr. in: Govt. Repts. Announ. 74 (17), 116, (Aug. 23, 1974)

5-0064
GENERAL INFORMATION

Andelman, Julian B. and Snodgrass, John E.
INCIDENCE AND SIGNIFICANCE OF POLYNUCLEAR AROMATIC HYDROCARBONS IN THE
WATER ENVIRONMENT
Critical Rev. Environ. Contr. 4 (1): 69-83 (Jan. 1974)

Conventional waste and water treatment processes only partially remove polynuclear aromatic hydrocarbons from waste effluents and surface or ground water. Solubility is limited but they may become solubilized by organic pollutants. Since they are known to be carcinogenic to animals and possibly to man, their concentration in the environment should be reduced where practicable.

5-0065
GENERAL INFORMATION

Venitt, S. and Levy, L.S.
MUTAGENICITY OF CHROMATES IN BACTERIA AND ITS RELEVANCE TO CHROMATE CARCINOGENESIS
Nature 250 (5466): 493-5 (Aug. 9, 1974)

Tests undertaken to examine the hypothesis that some chromium compounds, including a known carcinogen, are mutagenic have provided evidence that simple hexavalent chromium salts of Na, K, and Ca are mutagenic under conditions where related heavy metal salts show no mutagenic activity.

5-0066
GENERAL INFORMATION

Anon

A 40-MILLION-LBS./YEAR PLANT TO FORMULATE 1,2-DIBROMO-3-CHLOROPROPANE
Chem. Wk. 115 (15): 9 (Oct. 9, 1974)

Dow Chemical expects its new Magnolia, Arkansas, 40-million-lbs/year plant for 1,2-dibromo-3-chloropropane to be on stream in January 1976. In addition to this compound, which is a basic component of the nematocide, Fumazone, the plant will produce other Fumazone products.

5-0067
GENERAL INFORMATION

Wilson, William, K. et al, Eds.

WORLD DIRECTORY OF ENVIRONMENTAL RESEARCH CENTERS

R.R. Bowker, P.O. Box 1807, Ann Arbor, Mich. 48106. 1974. \$19.50

This directory of the various environmental research centers in 114 countries lists 5300 organizations and includes such information as (1) the director, (2) size of staff, and (3) specific areas of interest.

Anon
NITROBENZENE USE LIMITED
Soap, Cosmet. Chem. Spec. 50 (9): 18 (1974)

Canada's Office of Consumer and Corporate Affairs has announced a limit of 5 ppm of nitrobenzene in consumer products imported, sold, or advertised in Canada.

Anon
SODIUM CHLORIDE SOLUTIONS...
Chem. Eng. News 52 (40): 14 (Oct. 7, 1974)

Escherichia coli in 0.15M sodium chloride solution showed a 60% higher survival rate than usual to ionizing radiation of 5-25 kilorads, according to Dr. J. Kerry Thomas and Dr. Charles F. Kulpa of the University of Notre Dame. It is postulated this technique might be useful to protect healthy mammalian cells during radiation treatment.

Anon

BY-PRODUCT TETRANITROMETHANE CAN BE RECOVERED FROM TNT-MAKING OPERATIONS
Chem. Eng. News 52 (40): 14 (Oct. 7, 1974)

Trinitromethane (TNM) is a precursor of high-cost nitroform which is used for high-energy missile propellants. The Naval Surface Weapons Center has developed a method to recover this compound from its TNT-making operations and then to convert the recovered TNM to nitroform in a scrubbing tower.

REGULATIONS AND STANDARDS

See: 5-0012, Arsenic
5-0052, Vinyl chloride

Cikrt, M. and Bencko, V.

FATE OF ARSENIC AFTER PARENTERAL ADMINISTRATION TO RATS, WITH PARTICULAR
REFERENCE TO EXCRETION VIA BILE

J. Hyg., Epidemiology, Microbiol., and Immunology 18 (2): 129-36 (1974)

Sodium arsenate and sodium arsenite [^{74}As -labelled] administered intravenously to rats on doses of 100 μg As/rat were studied, particularly to determine arsenic excretion via bile during 24 hours, and to investigate the difference of excretion of tri- and pentavalent arsenic. Post-mortem examination of the rats, showed arsenic to be present in the wall of the gastrointestinal tract and in the intestines. After 24 hours, cumulative arsenic excretion via bile of trivalent arsenic was $10-82 \pm 8.9\%$; of pentavalent arsenic, $7.42 \pm 0.75\%$, of the dose given. For both valency forms, excretion rate was highest for the first 15 minutes. Significant statistical differences between trivalent and pentavalent arsenic were also noted: with trivalent arsenic, more arsenic was found in the liver and kidneys, while with the pentavalent form, more arsenic was found in the urine and erythrocytes.

Davies, Philip et al
ASBESTOS INDUCES SELECTIVE RELEASE OF LYSOSOMAL ENZYMES FROM MONONUCLEAR
PHAGOCYTES
Nature 251 (5474): 423-5 (Oct. 4, 1974)

This in vitro study on cultures of mouse peritoneal mononuclear phagocytes (MP) shows that asbestos induces a rapid, massive and selective release of lysosomal enzymes from MP. The release occurs in the absence of any detectable cell death and is accompanied by considerable increases in cellular levels of non-lysosomal enzymes.

Beyond providing a simple and sensitive in vitro test for the possible cytotoxicity of particulate substances and support for previous observations, the data indicate that some granuloma-inducing material other than asbestos might be administered to workers exposed to asbestos in order to maintain a local granulomatous reaction that might prevent the appearance of mesotheliomas and bronchogenic cancer.

Lee, G.L. and Smith, D.J.
STEELWORK INSULATED WITH SPRAYED CROCIDOLITE ASBESTOS:
CONTROLLING A POTENTIAL HAZARD
Ann. Occup. Hyg. 17 (1): 49-52 (Aug. 1974)

The presence of sprayed crocidolite asbestos insulation on Rolled Steel Joists was identified at a number of factory sites. Asbestos dust concentrations found in boiler house air samples indicated that exposures (0.18 fibers/cm^3 mean value) were approaching the threshold limit value defined by H.M. Factory Inspectorate at 0.2 fibres/cm^3 . A sealing process was adopted to protect surfaces from damage as well as a procedure for personal protection and security. Specific cost savings are mentioned.

Sethi, S. et al
GIANT CELL FORMATION AFTER INTRAPERITONEAL APPLICATION OF CROCIDOLITE
ASBESTOS FIBRES IN RATS
Ann. Occup. Hyg. 17 (1): 53-6 (Aug. 1974)

Multinucleated giant cells developed in the rat peritoneal cavity of rats after intraperitoneal administration of crocidolite using the slip cover method. Apparently, the giant cells developed by fusion of contiguous cells, the short development time (4 days) precluding formation by mitosis. The cells contained a few asbestos fibers. Polykarocytes, observed on the fifth day, were found only in the asbestos-treated rats. The fibrous shape of the asbestos dust is believed responsible for the formation of giant cells.

Bogovski, P. et al
BIOLOGICAL EFFECTS OF ASBESTOS
Biological Effects of Asbestos. Proc. of a Conference held at the International Agency for Research on Cancer. I.A.R.C. Lyon. Scientific Publications No. 8, 1973.

Because of wide-spread industrial use in fire-proofing, in the reinforcement of cement in building materials, and in the manufacture of brake linings and other friction materials, asbestos production is now four million tons/yr. It is also considered a major industrial hazard.

All types of asbestos fibers apparently cause asbestosis and bronchial carcinoma but, in man, the crocidolite fibers seem responsible for mesothelial tumors. In animal studies, however, all types of asbestos induce mesotheliomas. This leads to the hypothesis that the physical properties of the fibers rather than their chemical composition may be causative factors.

In animal studies, chemical carcinogens and asbestos fibers have synergistic effects in the induction of bronchial carcinomas.

[Review in: Lancet, 2 (7882): 706 (Sept. 21, 1974)]

Carter, Luther J.

POLLUTION AND PUBLIC HEALTH: TACONITE CASE POSES MAJOR TEST
Science 186 (4138): 31-4, 36 (Oct. 4, 1974)

Although a U.S. District judge in April, 1974, ordered the shutdown of Reserve Mining Company's taconite refining plant on Lake Superior because he deemed that the asbestos -- or asbestos-like-fibers in the taconite tailings could be a cancer hazard to 200,000 local residents, higher courts reversed his order.

This article reviews the situation, raising such questions as what degree of scientific evidence is needed for a court to determine industrial pollution is a definite public health threat, and how great must the threat be to enable a court to close a plant, especially when the plant plays a major role in local economics.

Carter, L.J.

JUSTICE JOINS IN APPEAL ON TACONITE POLLUTION
Science 186 (4160): 244 (Oct. 18, 1974)

The U.S. Dept. of Justice with Minnesota, Wisconsin, and Michigan has asked the Supreme Court to allow a District Court judge to close (Reserve Mining Company's) taconite plant on Lake Superior that contaminates public water supplies with possibly carcinogenic asbestos-like fibers. The plant discharges daily 67,000 tons of taconite tailings into the water and 100 tons of particulates into the air.

An appeals court and the Supreme Court stayed the judge's original order. The action of the higher courts may have set a precedent that could impede future environmental health cases, requiring definite proof of hazard via a "body count"

Gross, Paul

ASBESTOS FIBERS IN DRINKING WATER (Letter to Editor)
J. Amer. Med. Ass. 229 (7): 767 (Aug. 12, 1974)

The writer commends the conclusion by Mason et al [J. Amer. Med. Ass. 228: 1019 (1974)] that there was no apparent carcinogenic effect from asbestos in drinking water, but corrects Mason et al's reference to Pontefract and Cunningham [Nature 243: 352 (1973)] relative to finding that "asbestos fed experimentally to rats has passed through the gastric and intestinal mucosa into the bloodstream." He holds that asbestos was injected as a suspension into the stomach cavity, probably causing the tearing open of vessels by the needle passing through the gastric wall, allowing the asbestos fibers to leak out of the hole. He claims that because there is no evidence of dust deposition in the intestinal walls of coal-miners or hard-rock miners it seems that no transmigration of ingested particles through the intestinal mucosa occurs in man.

Marvinney, Sandy and Beil, Karen

IT STACKS UP! (AIR POLLUTION EXPLAINED IN PLAIN ENGLISH)
Dept. of Environmental Conservation, State of New York [AIR-P28 (5/74)]

Asbestos is included among the less common substances emitted into the air by industry and other source, the six major pollutions being identified as hydrocarbons, carbon monoxide, photochemical oxidants, sulfur dioxide and particulates. Asbestos, linked to lung cancer and intestinal cancer, is widely used in industry, is found in some talc products, and is hazardous not only to those working with it but also to those living near major building and demolition construction. Smokers are more susceptible to danger because of a synergistic reaction between cigarette smoke and asbestos fibers in the lungs.

New York State has banned asbestos-spraying in construction projects, etc.

McCullagh, S.F.

THE BIOLOGICAL EFFECTS OF ASBESTOS

Med. J. Aust. 2 (2): 45-9 (July 13, 1974)

Pulmonary asbestosis is differentiated from pleural asbestosis, and the suggestion is made that the term, "pulmonary asbestosis," should be used in discussions of asbestosis." In a brief review of the two types of asbestosis, it is pointed out that pleural asbestosis is not likely to be the precursor of mesothelioma. The carcinogenicity of fibers, the role of tobacco smoking in asbestos-related lung cancers, respiratory cancer, mesothelioma, other asbestos-associated cancers, the workplace hygiene standard, medical surveillance of the workforce, and the general urban environment are topics discussed briefly.

The carcinogenicity of asbestos fibers is now believed due to the physical rather than the chemical structure of the fibers. When viewed from the standpoint of its use as a fire retardant or in brake linings, the advantages of asbestos may outweigh its human hazard potential. A negligible amount of asbestos is identified in water and beverages.

Smith, Peter J.

FOR THOSE IN PERIL ON THE FACTORY FLOOR

Nature 251 (5476): 560-1 (Oct. 18, 1974)

Arguing that the Scientific Establishment should have a greater commitment to human welfare (or "community science"), the author uses as a case in point the asbestos-induced diseases (asbestosis, cancer) so prevalent among asbestos production workers. He suggests several things that the scientific community could (and should) have done and could still do to define such problems, identify gaps in knowledge, secure needed scientific data, etc. The number of British workers killed by asbestos-induced mesotheliomas is unknown because of lack of data; estimates have been made that in the U.S. 20,000 asbestos workers will die of lung cancer, 7,000 of mesothelioma, and 7,000 of other cancers and asbestosis out of every 100,000 entering the industry under 1971 U.S. safety standards.

6-0012
FLAME RETARDANTS
(New Product)

Anon

STAUFFER'S FYROL 76 NAMED TO TOP HUNDRED
Text. Chem. Color. 6 (10): 10 (1974)

Fyrol 76, a flame retardant for cellulosic fabrics produced by Stauffer Chemical Company, is one of the 100 most significant new technical products of 1974 according to Industrial Research magazine.

6-0013
FLAME RETARDANTS

LeBlanc, R. Bruce and LeBlanc, D.A.
DURABLE, LOW COST FLAME RETARDANCE FINISHING
Text. Chem. Color. 6 (10): 217/29-217/31 (1974)

Titanyl sulfate treatment of phosphorylated cellulosic fabrics produced durable flame retardance to comply with the Children's Sleepwear Standard FF 3-71. Other desirable fabric properties, such as good strength retention and soft handling resulted from this finishing process. Overall costs of this process should be lower than present commercial cellulosic fabric finishes. In addition, the treating bath is chemically stable and no potentially toxic chemicals are used or produced.

Chiou, W.L.

AEROSOL PROPELLANTS: CARDIAC TOXICITY (Letter to Editor)

J. Amer. Med. Ass. 229 (13): 1722 (Sept. 23, 1974)

Augmenting an earlier letter to the editor, the writer cites Dollery, C.T. et al [Lancet 2:1164-6 (1970)] in an article on, "Blood concentrations in man of fluorinated hydrocarbons after inhalation of pressurized aerosols," as providing supporting evidence of a possible link between the sudden death of sensitive asthmatic patients and the cardiac toxicity of aerosol propellants. Dollery et al studied the effects of trichloromonofluoromethane (Freon 11 [F11]).

Zief, Morris and Horvath, Joseph, Jr.

CONTAMINATION CONTROL IN THE PRODUCTION OF HIGH-PURITY CHEMICALS

J. Testing and Evaluation 2 (2): 113-7 (1974)

As analytical instrumentation techniques improve detection limits for trace elements are reduced proportionally. Control of high-purity chemical contamination such as clean air workrooms, interaction with the container, filtration methods, and water are stressed. On the question of containment, fluorinated hydrocarbons are outstanding for chemical resistance. Although data are not available for their resistance to all the common acids, polymers of tetrafluoroethylene, chlorotrifluoroethylene, vinylidene fluoride, fluorinated ethylene-propylene, and tetrafluoroethylene-ethylene mixtures are useful for many chemicals.

Hammond, Allen L. and Maugh, Thomas H. II
STRATOSPHERIC POLLUTION: MULTIPLE THREATS TO EARTH'S OZONE
Science 186 (4161): 335-8 (Oct. 25, 1974)

Aerosol sprays that release chlorofluoromethanes into the atmosphere join supersonic transports and nuclear weapons as potential sources of catalytic agents (oxides of nitrogen and free chlorine) that penetrate the earth's stratosphere to decompose the earth's protective ozone shield. Discussion covers possible effects of these hazardous materials, existing concentrations, and a preliminary model calculating an ultraviolet flux reaching the ground with its potential sunburn effects.

Williams, Faith M. et al
THE USE OF ^{18}F LABELLED FLUOROCARBON-11 TO INVESTIGATE THE FATE OF INHALED FLUOROCARBONS IN MAN AND IN THE RAT
Thorax 29: 99-103 (1974)

The absorption, distribution, and elimination of inhaled fluorocarbons in man and the rat were studied, using Fluorocarbon-11 labeled with ^{18}F . In the rat, elimination from the blood and high blood flow organs was rapid, while elimination from fat was very slow as was the fall in whole body count. In man, there was a rapid initial fall in whole body count. A rapid fall in lung concentration indicated an initial transfer to the blood stream and uptake by tissues, with slow elimination from fat. Apparently, the fluorocarbon was not deposited in the mouth as droplets.

Blake, D.A. and Mergner, G.W.

ARE FLUOROCARBON PROPELLANTS METABOLIZED?

Abstract of Paper presented at 13th Ann. Mtg. of the Society of Toxicology,
Wash., D.C. March 10-14, 1974

Using 15 Beagles and 4 humans, the possible bio-transformation of F-11 and F-12 after 7-20 min. inhalation was studied. Dosages were 1-5,000 ppm F-11 and 1-10,000 ppm F-12 containing up to 180 μ Ci of ^{14} C-fluorocarbon. Exhaled air was collected and assayed for ^{14} C-fluorocarbon and ^{14} CO₂ with all the administered fluorocarbon recovered within an hour. Analysis was made of venous blood samples and urine for fluorocarbon content and non-volatile radioactivity respectively with only traces of radioactivity being found in urine. Although dog tissues contained low levels of non-volatile radioactivity 24 hrs. after exposure, it represented less than 1% of the administered dose. Radio-labeled impurities present in the administered gas mixture accounted for all the trace levels. Authors concluded that F-11 and F-12 are refractory to bio-transformation after a short inhalation exposure and are rapidly exhaled in unaltered chemical form.

[Abstract in: Toxicol. Appl. Pharmacol. 29 (1): 142 (July 1974)]

Adir, Joseph et al

KINETICS OF UPTAKE AND ELIMINATION OF TRICHLOROFLUOROMETHANE (F-11) AND
DICHLORODIFLUOROMETHANE (F-12) IN BEAGLES AND HUMANS

Abstract of Paper presented at 13th Ann. Mtg. of the Society of Toxicology,
Wash., D.C., March 10-14, 1974

The kinetics of uptake and elimination of F-11 and F-12 in blood concentrations of 6 Beagles and 2 humans were analyzed by a digital computer program. By fitting the data to a model mathematically, the blood concentration-time curves was described by a bi-exponential function with an initial rapid distribution and a slower elimination. Using the averaged pharmacokinetic parameters, simulation of the model shows the F-11 levels in the central and peripheral compartments are substantially higher and persist longer than those of F-12 at the same inspired concentration. There is consistency with the kinetics of the fluorocarbons and their blood solubilities, oil/water partition characteristics, and other physiologic considerations.

[Abstract in Toxicol. Appl. Pharmacol. 29 (1): 142-3 (July 1974)]

Swann, H.E., Jr. et al
ACUTE INHALATION TOXICOLOGY OF VOLATILE HYDROCARBONS
Am. Ind. Hyg., J. 35 (9): 511-8 (1974)

Five minute exposures of mice for volatile hydrocarbons (n-pentane, n-hexane, n-heptane or iso-octane) in concentrations of 1,000; 2,000; 4,000; 8,000; 16,000; 32,000; 64,000; and 128,000 ppm produced anesthesia and irritation to the respiratory system. Although the intensity of irritation increased with the length of the carbon chain, the anesthetic properties became less and the concentration needed to produce narcosis and respiratory arrest was lower. With the exception of iso-octane, respiratory arrest occurred with all of the agents at the end of inspiration. With iso-octane respiratory arrest occurred in the expiratory phase during prolonged expiration. Although respiratory arrest was reversible with diethyl ether, it was not with methoxyflurane or volatile hydrocarbons.

Anon
ROHM & HAAS DENIES....
Chem. Eng. 81 (23): 33-4 (Oct. 28, 1974)

BCME (bis-chloromethyl ether) was produced at the Philadelphia plant of Rohm & Haas as a chemical intermediate from 1948 to 1950. Only small amounts of BCME have been produced since, as an impurity formed in the production of CME (chloromethyl ether). Rohm & Haas had enough evidence accumulated by mid-1971 to identify BCME as a "probable cause of lung cancer" in up to 22 of its employees and modified the Philadelphia facilities to protect workers. In addition to alerting the workers and forwarding the data to federal and state occupational-health authorities, the company contacted other CME users to make them aware of its potential hazards.

Albro, P.W. and Thomas, R.

INTESTINAL ABSORPTION OF HEXACHLOROBENZENE AND HEXACHLOROCYCLOHEXANE ISOMERS
IN RATS

Bull. Environ. Contam. Toxicol. 12 (3): 289-94 (Sept. 1974)

In one of its many uses, that of a fungicide, hexachlorobenzene (HCB) has been suspected in poisoning of humans in Turkey who consumed wheat with 2g HCB/100 kg seed. The intestinal absorbability of HCB isomers was studied in rats under conditions where coprophagia was prevented. For the purposes of comparison, BHC (hexachlorocyclohexane) was studied at the same time. Data shows complete excretion of HCB and BHC was observed after a single dose. Further investigation showed HCB more poorly absorbed and/or metabolized by rats than a smaller dose of BHC.

Anon

MARRIAGE OF COAL AND NUCLEAR ENERGY BEING EMPHASIZED

Coal Age 79 (10): 216 (1974)

Presentations on a nuclear coal solution gasification process, nuclear process heat and direct coal gasification, and German studies of nuclear coal gasification were given at an American Nuclear Society meeting on Nuclear Energy alternatives for Industrial Processes. The ANS is studying the use of byproduct heat from nuclear energy to drive steam turbines and convert coal into gas and liquids.

Anon

SITE CHOSEN TO TEST IN SITU GASIFICATION

Coal Age 79 (10): 22 (1974)

With the intention of producing a low-Btu gas suitable for generating electricity, Consolidation Coal Company of Continental Oil Co. with the Bureau of Mines testing in situ coal gasification in thin eastern seams. If successful, coal in seams deemed difficult and hazardous to mine could be used in underground gasification.

Anon

USING GASIFIED COAL IN INDUSTRY

Tappi 57 (10): 13-4 (1974)

Should U.S. industry have to resort to coal gasification for its oil and gas some of the environmental problems resulting would be: disposal of ash residue, control of coal dust, removal from the fuel gas of such potential atmospheric contaminants as sulfur and particulates.

Anon

M.W. KELL. CO'S MOLTEN-SALT GASIFICATION PROCESS...

Chem. Eng. 81 (23): 35 (Oct. 28, 1974)

In pilot plant tests, M.W. Kellogg tested a system using molten alkali-metal carbonates as gasification catalyst and heat-transfer medium to pyrolyze heavy petroleum stock. Ethylene yields as high as 33% at a molten-salt temperature of 1,300 to 1,400°F and propylene yields of 17% at a salt temperature of 1,200°F were reported at the meeting of the Society of Petroleum Engineers. Kellogg claims their olefin yields and feedstock flexibility are equal to or better than pyrolytic cracking, steam pyrolysis, sand cracking or fluid gasification.

Anon

MOCA. CURING AGENT IMPROVED AND FREELY AVAILABLE
Rubber Age 106 (10): 67 (1974)

DuPont is producing MOCA in compliance with the new OSHA standard. The MOCA curing agent has actually been improved from this effort as better handling characteristics in mechanized operations and slightly shorter melting times have resulted from considerably smaller individual pellets.

Roberts, Alan
THE STABILITY OF A FEASIBLE RANDOM ECOSYSTEM
Nature 251 (5476): 807-8 (Oct. 18, 1974)

Although many biologists believe that ecosystems are more stable when they contain larger numbers of interacting species, many mathematical models of complex ecosystems indicate the opposite, suggesting that complexity yields instability. The author imposes a feasibility (equilibrium population values must be positive) restriction on his model to study this problem.

Smith, Thor L.
TENSILE STRENGTH OF POLYURETHANE AND OTHER ELASTOMERIC BLOCK COPOLYMERS
J. Polym. Sci. (Polymer Phys. Ed.) 12 (9): 1825-48 (Sept., 1974)

In this discussion of the processes contributing strength and toughness to polyurethanes and other elastomeric block copolymers, it appears that high strength usually depends upon a dispersed phase. Tensile strength also is affected by type, size, and concentration of polar segments in polyurethane elastomers. Among the materials studied are those containing domain-forming segments resulting from the reaction of toluene-2,4-diisocyanate (TDI) with toluene-2,4-diamine or with 4,4'-methylene-bis-(2-chloroaniline), and from the reaction of 4,4'-diphenyl methane diisocyanate (MDI) and 1,4-butanediol. TDI segments give plastic domains that augment strength over a wide temperature range; MDI is not so effective.

Anon
CURON DIVISION....
Rubber Age 106 (10): 102 (1974)

A flexible polyurethane foam manufacturing plant is expected to be on stream in Orlando, Florida, by November 1975, according to Curon Division of Reeves Bros., Inc. Fully integrated to produce a full line of polyester flexible foams, the plant will have 120,000 square feet of space and a capacity to supply existing and planned foam fabricating facilities in Florida.
Florida.

ANON

BAYER AG,...

Rubber Age 106 (10): 8 (1974)

Bumpers of integral skinned, thin-walled, polyurethane foam moldings, backed by hydraulic shock absorbers, have been tested by General Motors on New York taxicabs. A savings of more than 30% in repair costs was reported on 1,000 collisions in six million miles. Bayer AG, Leverkusen, West Germany, and Krauss-Maffei worked together to supply GM with automatic equipment for the manufacture of the 1975 range of shock absorbing bumpers.

Pardys, Stephen and Brotman, Martin

TRICHLOROETHYLENE AND ALCOHOL: A STRAIGHT FLUSH (Letter to Editor)

J. Amer. Med. Ass. 229 (5): 521-2 (July 29, 1974)

Trichloroethylene, industrial solvent, degreaser, fat extractor, film cleaner, gas purifier, and anesthetic, has caused cardiac arrhythmias and hepatic and renal abnormalities. A case history is cited, briefly, indicating a little-mentioned but common side effect of chronic exposure--alcohol intolerance, characterized by facial flushing, pressure in head, blurred vision, etc.

SHALE OIL EXTRACTION AND REFINING

Anon

OIL FROM SHALE BY 1978, SAY RESEARCHERS

Coal Age 79 (10): 30 (1974)

Shale oil extraction process of Paraho Development Corp. retorts rough crushed shale of varying sizes with a waste product environmentally easier for disposal than finer crushed shale. With the success of this technology, a 100,000-bbl-per-day plant is planned for full production by 1980 with potential yields of 90 to 100%. To be located in Utah, the complex will cost \$1.4 billion and will be supplied by leased oil shale lands jointly developed by Phillips Petroleum, Sun Oil, White River Shale Oil Corp. and Sohio Petroleum interests.

SHALE OIL EXTRACTION AND REFINING

Anon

AND THAT OFF-AGAIN, ON-AGAIN OIL-SHALE PROJECT IS OFF AGAIN

Chem. Eng. 81 (23): 34 (Oct. 28, 1974)

Suspension of plans for a commercial 50,000 bbl per day shale-oil plant in Colorado has been announced by the Oil Shale Corp. (Tosco) and its partners in Colony Development Operation. Although not considered the reason for the change in plans, there was also mention of possible carcinogenic problems with airborne emissions.

ANON

VCM EMISSION STANDARDS ABROAD DO NOT ALWAYS MEAN THE SAME THING
Chem. Wk. 115 (16): 39 (Oct. 16, 1974)

New experiments on animals' exposure to VCM must be completed before the acceptance of any of the current limits which vary from country to country. Holland plans to impose a difficult to meet 1-ppm limit and chimney emissions in Germany are limited to 150 mg/cubic meter VCM. The recommended VCM emission standard of 50 ppm awaits the new results before finalisation.

Purchase, I.F.H. and Williamson, K.S.
PROPORTIONAL MORTALITY AMONG VINYL-CHLORIDE WORKERS
Lancet 2 (7880): 591-2 (Sept. 7, 1974)

Comment is made that data presented by Monson et al (Lancet, Aug. 17, p.397) (See CATS 4-0035), which compared local figures with national figures, cannot be used to recalculate the proportional mortality using regional incidence figures from the U.S. Because of regional variations in cancer mortality figures, it is necessary to compare a study group with a truly matched community group.

Falk, Henry et al
MORTALITY AMONG VINYL-CHLORIDE WORKERS (Letter to Editor)
Lancet 2 (7883): 784 (Sept. 28, 1974)

Mortality data related to cancers from vinyl chloride exposure, presented by Monson et al (Lancet, Aug. 17, p.397) (See: CATS 4-0035), are questioned because among other things Monson et al included a large proportion of workers not directly engaged in VC production or polymerization, and did not include all VC workers at the two plants under study. NIOSH/Center for Disease Control is now conducting a detailed analytical study in this area.

Monson, Richard R.
PROPORTIONAL MORTALITY AMONG VINYL-CHLORIDE WORKERS (Letter to Editor)
Lancet 2 (7884): 848 (Oct. 5, 1974)

Replying to Purchasz and Williamson's comment (Lancet, Sept. 7, p. 397) (See: CATS 4-0035), the writer agrees that studies of mortality and proportional mortality should have as a basis of comparison disease-rates from a similar community, but states that tabulations of deaths in the U.S. are not available in the detail required. He cites a recent NIH publication by Mason and McKay, "U.S. Cancer Mortality by County: 1950-69", Dept. HEW Publ. No. (NIH) 74-615 (1974), as an aid to assessing the degree of bias likely to be introduced by using national data.

Anon

NEW VCM REGULATION IS ONLY ONE INFLUENCE ON A CHANGING OUTLOOK FOR PVC
Mod. Plast. 51 (10): 20 (1974)

The impact of OSHA's new standard on workplace exposure to vinyl chloride monomer is varied. Some plants are cutting production, not going ahead fully with planned increase in PVC production. Increased resin prices are seen as another result, cost of polymerization apparently increase sharply as VCM exposure levels decrease (a 50 ppm level adding 0.72¢/lb to PVC costs, a 25 ppm level adds 2.73¢, and a 10 ppm level or less adds at least 8¢/lb). Some PVC bottle compounds producer plan to phase out, e.g., Borden and B.F. Goodrich. On the other hand, Goodyear and Rubber is introducing a new low-temperature cutting unit for supermarket meat wrapping, and Robintech Inc. has patented a new manufacturing process, Rocor IKC (In Kettle Compound), said to eliminate pre-blending for PVC pipe manufacture and to eliminate worker exposure to VCM at the conversion facility.

Kalina, Joseph F.

SEEKING TO SOLVE PVC'S HOT-WIRE CUTTING PROBLEM
Mod. Packag. 47 (10): 7, 16 (1974)

Goodyear and Borden are faced with a class-action suit for \$284 million by meat-wrapping personnel charging chronic exposure to toxic fumes from thermal decomposition of PVC film passing over an electric heat wire used to cut the wrapping. Now, Goodyear announces a low-temperature (260°F) cutting unit to replace the old cutting wire that operates between 700 and 800°F.

Schlauch, W.F. and Cairi, R.J.

IMPROVED VINYL COPOLYMERS: BETTER NONWOVEN BINDERS

Text. Chem. Color. 6 (10): 223/37-229/43 (1974)

Application of vinyl copolymers as binders for new nonwoven constructions were investigated. Glass transition Temperature, as well as film and web properties, were reviewed for copolymers of vinyl acetate, vinyl chloride and other vinyl comonomers. Comparisons were made and data given for tensile and tear strength, stiffness and flexibility, effects of plasticizer and resin pickup, methods of application of binder on sheet properties. Specific end-use properties were also examined, including flammability, heat sealability, durability, stiffness and adhesion to synthetic fibers. It was concluded that binder resins can meet specific design requirements for nonwoven applications if binder design is considered with application method to develop an optimum product.

Anon

CANCER LINK CLOSES PVC PLANT IN NORWAY

Chem. Eng. News 52 (42): 7 (Oct. 21, 1974)

The 60,000 metric-ton/yr Norsk Hydro PVC plant at Heroya, Norway, is closed temporarily because of OSHA's new 1 ppm level of worker exposure to VC. After a study by doctors and other experts, plant will likely resume operations; probably will set VC exposure limit below the 20 to 30 ppm now in effect. One Norsk employee died from angiosarcoma in 1972.

If plant does not re-open, production of 300,000 metric-tons/yr at nearby Rafnes is a possibility. Other European PVC makers awaiting Norway's move. Consensus in Europe is that current technology does not permit reaching 1 ppm level, but efforts probably will be made to reduce concentrations below 25 ppm.

Mark, D.

PROBLEMS ASSOCIATED WITH THE USE OF MEMBRANE FILTERS FOR DUST SAMPLING WHEN COM-
POSITIONAL ANALYSIS IS REQUIRED

Ann. Occup. Hyg. 17 (1): 35-40 (Aug., 1974)

Filter material characteristics for airborne dust sampling are set forth to evaluate a variety of membrane filters. Polyvinyl chloride membrane filters have a lower rate of moisture absorption and incinerate gently but have a low collection efficiency by comparison. Electrostatic charge effect on PVC membrane filters was examined. Surface treatment of the PVC with a detergent solution resulted in eliminating the electrostatic charge pattern and improving the undersampling problems from 14% to an average of 2%.

VINYL CHLORIDE

See also: 6-0046, General Information

Anon

RAP FOR FILM WRAP

Chem. Wk. 115 (16): 20 (Oct. 16, 1974)

Mice exposed to about 200 ppm vinylidene chloride developed cancer according to a Dow Chemical medical researcher, Pier Luigi Viola. Both Dow and PPG Industries, the primary U.S. producers of vinylidene chloride, mainly for film wraps, control their employees' work levels for 10ppm or below. About 75 Dow employees work with vinylidene chloride monomer at Freeport, Texas, and Plaquemine, Louisiana, and with copolymer resins at Midland, Michigan, while only about 12-15 PPG employees work with the monomer at Lake Charles, Louisiana. Further research may be forthcoming.

Carter, Luther J.
CANCER AND THE ENVIRONMENT (I): A CREAKY SYSTEM GRINDS ON
Science 186 (4160): 239-42 (Oct. 18, 1974)

Review of problems facing EPA, other Government agencies, and industry in relation to potentially carcinogenic or hazardous pesticides. Definite need seen for establishment of adequate test programs for all persistent pesticides before they are registered for use. NCI plans new interagency task force with this as one of its objectives.

Gillette, Robert
CANCER AND THE ENVIRONMENT (II): GROPING FOR NEW REMEDIES
Science 186 (4160): 242-5 (Oct. 18, 1974)

EPA is only starting to contend with the big problem of regulating man-made carcinogens. Difficulties arise with compounds like vinyl chloride that have such wide-spread, diverse uses; banning of pesticides (limited field of application) is simpler. Complicating matters is the huge number of new compounds produced yearly and the very small number (about 6000 out of nearly 2 million) that have been tested for carcinogenicity.

Hoffmann, Dietrich et al
N'-NITROSONORNICOTINE IN TOBACCO
Science 186 (4160): 265-7 (Oct. 18, 1974)

Due to carcinogenic biological activity in a wide variety of experimental animals from N-nitroso compounds, N'-Nitrosornicotine (NNN) is considered a potential organic carcinogen and the first isolated from tobacco. It is found in unburned tobacco and the amount in commercial U.S. tobacco products, like cigarettes, cigars and chewing tobacco, is between 1.9 and 88.6 ppm. N-Nitrosamines rarely exceed 0.1 ppm in meat, fish, and beverages.

Anon
EPA BROADENS ITS DEFINITION OF CARCINOGEN
Chem. Eng. News 52 (41): 13 (Oct. 14, 1974)

EPA believes tumorigenic substances and carcinogenic substances to be "synonymous" for purposes of "carcinogenicity testing;" warns that any substance that induces cancer in animals, regardless of dose level, should be treated with caution.

EPA

FISH KILLS BY POLLUTION IN 1972

Office of Water Planning and Standards, Monitoring and Data Support Division,
Data Reporting Branch, Environmental Protection Agency, Wash., D.C. 20460
(EPA-440/9-73-001)

Over 17.7 million fish were reported killed in 1972 in 687 separate incidents of water pollution. At least one fish killed incident reported by each of 44 states; five states (Alabama, Calif., Ohio, Pa., and Texas) accounted for 42% of total kills. The majority of the fish kill reports are traced to industrial sources, but municipal operations killed more individual fish (8.4 million) than any other source.

Although the 1972 fish kill incidents were lower than in 1971, the 1972 reports are the second highest reported in 13 years.

Thumm, Byron A.

METHYL YELLOW (Letter to Editor)

Chem. Eng. News 52 (42): 5 (Oct. 21, 1974)

Methyl yellow is listed as a carcinogen according to OSHA under the name 4-dimethylaminobenzene but appears in most tables of acid-base indicators as methyl yellow. Not only should the two names appear together for purposes of safety but also, where possible, use of a different appropriate indicator such as brom phenol blue should be recommended.

Wright-Patterson AFB

PROCEEDINGS OF THE ANNUAL CONFERENCE ON ENVIRONMENTAL TOXICOLOGY (4TH) HELD AT FAIRBORN, OHIO, ON 16, 17, AND 18 OCTOBER 1973. (Final Rept. Dec., 1973 Rept. No. AMRL-TR-73-125)(AD-781 031)

Aerospace Medical Research Lab., W-P AFB, Ohio

The report is a compilation of the papers presented at the Proceedings of the 4th Annual Conference on Environmental Toxicology, sponsored by the University of California, Irvine and held in Fairborn, Ohio on 16, 17, and 18 October 1973. Major technical areas discussed included Toxic Substance Control Act of 1973; toxicology of halogenated solvents, aerosol propellants, and fire extinguishants; and toxicology of propellant, materials and assessment of carcinogenesis to certain materials.

[Abstract in: Gov. Reports Announcements 74 (17): 53, (Aug. 23, 1974)]

NIOSH

INDUSTRIAL ENVIRONMENT

Environ. Rept. 5 (11): 88 (Oct. 14, 1974)

The Industrial Environment -- Evaluation and Control is a 719 page NIOSH document available from GPO as SN-1701-00396 at \$11.70. Useful in evaluating potentially harmful effects of physical and chemical air contaminants and safety, it offers information also on solid waste and control of water pollution. Its coverage as an industrial hygiene textbook includes related areas in mathematics, chemistry, biochemistry, physiology and toxicology.

Anon

FOOD DYE, CANCER LINKED

Daily Evening Item, Lynn, Mass., p.24 (Nov. 1, 1974)

A food dye, Red No. 2, is cited by a Ralph Nader research group as a potential carcinogen and as potentially damaging to the baby of a pregnant woman, if she drinks more than a third of a can of strawberry soda pop/day.

The dye, used in ice cream, soda pop, lipstick, pill coatings, etc., has been tested by FDA since 1951, and the data "strongly indicate that Red No.2 does cause cancer." It apparently "is safe as far as fetotoxicity is concerned only at extremely low levels."

Minami, Masayasu et al
ACRYLONITRILE POISONING. I. RESULTS OF EXPOSURE TO ACRYLONITRILE VAPOR.
Tokyo Joshi Ika Daigaku Zasshi 43 (10): 849-55 (1973). (In. Jap.)

Inhalation of 20 ppm acrylonitrile by rabbits for 8 hr/day once a week over a period of 8 weeks caused an increase in pO_2 levels in the blood, a decrease in pCO_2 levels, and an increased alkalinity of pH levels. Cyanide ions liberated from acrylonitrile were evidently responsible for the increase in pO_2 levels. Cyanide ions were metabolized to thiocyanate ions. Blood hemoglobin concentrations and hematocrit values also increased.

Ott, Marvin Gerald et al
RESPIRATORY CANCER AND OCCUPATIONAL EXPOSURE TO ARSENICALS
Arch. Environ. Health 29 (5): 250-5 (Nov. 1974)

A study of the proportionate mortality experience of workers in a plant producing an arsenical insecticide showed a much higher rate of respiratory cancer among the 173 workers exposed primarily to lead arsenate and calcium arsenate than was found in 1,809 non-exposed workers. Records of deaths were examined for the years 1940-1973. In addition to the increase in respiratory cancer, a positive dose-response relationship enhances the theory that arsenical compounds are a cause of respiratory cancer.

Pierson, D.H. et al
CHEMICAL UNIFORMITY OF AIRBORNE PARTICULATE MATERIAL, AND A MARITIME EFFECT
Nature 251 (5477): 675-9 (25 Oct. 1974)

Airborne particulate material has a uniform elemental composition, in which the industrial elements are enriched relative to soil. In the surface of the North Sea the trace element content seems to be massively enhanced relative to bulk seawater. Arsenic is one of the 29 elements measured. One potential result of this study may be that in the monitoring of dust-laden environment, it may be possible by comparison with the "normal" elemental mixture to identify and define the presence of elemental "pollution."

Tolley, J.A.

TOXIC SUBSTANCES, SYNERGISM, AND DRINKING-WATER (Letter to Editor)
The Lancet II (7887): 1024 (Oct. 26, 1974)

The author stresses the need for awareness of the possible synergistic effects of multiple contaminants in drinking water. Although arsenic, cadmium, lead, and mercury can each, individually, inhibit sulfhydryl enzymes, additive effects, in vivo, are possible from combinations of two or more of these elements.

Whitacre, R. Wayne and Pearse, Carlton S.

ARSENIC AND THE ENVIRONMENT

Colo. Sch. Mines, Minerals Ind. Bull. 17 (3): 19 pp. (1974)

A review is presented with 60 references.

Anon
FOCUS ON JOB HAZARDS
Chem. Wk. 115 (19): 19 (Nov. 6, 1974)

At a 3-day International Federation of Chemical and General Workers (IFCGW), held in Geneva in late October, the focus was on occupational hazards in the chemical, rubber and allied industries. Vinyl chloride was the main target of the session but benzene, bischloromethyl ether, talc, asbestos, arsenic, benzidine and beta-naphthylamine were discussed as health hazards to workers. Cesare Maltoni reported that exposure of mice, rats, and hamsters to vinyl chloride monomer provoked (in addition to angiosarcoma) lung and brain cancers in one or more of the three species of animals.

7-0007
ARSENIC

Anon
ARSENIC. . .
Env. 16 (9): 21-2 (Nov., 1974)

In a very brief discussion of the discovery of lung or lymphatic cancer as the cause of death of workers in two manufacturing companies, the point is raised that because the toxicity of arsenic compounds depends upon their chemical composition, it is difficult to assess the public hazard. Research is needed to determine if nonpoisonous arsenic compounds released into the environment are changed naturally into poisonous forms by bacteria.

Anon

PLENTY OF ENERGY OUT THERE IN THE SUNSHINE

Environ. Sci. Technol. 8 (12): 976-8 (Nov., 1974)

In this review of solar energy potential and methods of using that energy, it is pointed out that solar energy does not pollute.

One efficient way of using solar energy is via photovoltaic cells of silicon "doped" with traces of arsenic, boron, phosphorus, and other elements of similar properties.

ARYL PHOSPHATES

See also: 7-0056, General Information

Anon

ASBESTOS FINDING LEADS ILLINOIS EPA TO SET UP MONITORING GEAR
Environ. Health Letter 13 (19): 7-8 (Oct. 1, 1974)

After finding asbestos in Lake Michigan, the Illinois EPA has decided to monitor the lake waters using an electron microscope, capable of magnifying 200,000 times. This sensitive equipment will distinguish asbestos from asbestos-like fibers.

Anon

NEW REGULATIONS GOVERNING STATE AIR POLLUTION CONTROL SOURCES PROPOSED
Environ. Health Letter 13 (21): 2 (Nov. 1, 1974)

New EPA proposed regulations will include emission of pollutants not now covered by national ambient air standards or standards for hazardous air pollutants, such as asbestos, beryllium, and mercury. Proposed regulations affect only the 230 plants producing sulfuric acid, but EPA plans to issue a performance standard for sources of emissions not now covered, e.g., fluorides emitted by aluminum smelters and phosphate rock processing plants.

*7-0011
ASBESTOS

Williams, Colin J. and Hawley, Robert E.
MONITORING EMPLOYEE EXPOSURE TO HAZARDOUS AIRBORNE DUSTS
Pollut. Eng. 6 (10): 38-9 (1974)

Under the Target Health Hazards Program, initiated by OSHA in January 1972, OSHA can make unannounced visits to plants to check records and test employee exposure to chemicals. Sampling and monitoring equipment are described briefly. Target pollutants include lead, carbon monoxide, asbestos, silica, and cotton dust. The last three are sources of hazardous microscopic particles that can promote lung disorders.

*7-0012
ASBESTOS

Anon
EXPANDED GOVERNMENT RESEARCH...
Environ. Sci. Technol. 8 (12): 965 (Nov. 1974)

The FY 1974 Labor-HEW appropriation bill was amended by the Senate to fund a 3-year study of health hazards from industrial and household chemicals, including the potential hazards from drinking water that is contaminated by asbestos. NIOSH and the Natl. Inst. of Environmental Health Sciences can expect a 25% increase in funding.

Reeves, Andrew, et al
INHALATION CARCINOGENESIS FROM VARIOUS FORMS OF ASBESTOS
Environ. Res. 8 (2): 178-202 (Oct. 1974)

In a 2-year study, rats, rabbits, guinea pigs, gerbils, and mice inhaled asbestos fibers (chrysotile, crocidolite, or amosite) at mean atmospheric concentrations of 47.9-50.2 mg/m³. All species experienced moderate fibrosis, with chrysotile-exposed animals being the least affected. Two bronchial papillary carcinomas developed in mice, but were not felt to be directly induced by asbestos. In rats, however, there was a 7-9% incidence of cancer from all three forms of asbestos, including amosite, which had earlier been reported to be less carcinogenic than the other fibers. Apparently, different etiologic principles are involved in asbestos-caused lung cancer and plural mesothelioma.

Anon
ASBESTOS PRECEDENT?
Chem. Wk. 115 (18): 13 (Oct. 30, 1974)

A Supreme Court ruling to let stand a lower court award of \$79,000 to the widow of an insulation worker, who died of mesothelioma, an asbestos-related lung cancer, may make CPI companies more vulnerable to product liability suits. Explicit warnings of possible hazards to workers are necessary, the judge ruled.

EPA

ASBESTOS AND MERCURY, PROPOSED AMENDMENTS TO NATIONAL EMISSION STANDARDS
Fed. Reg. 39 (208, Part II): 38064-73 (Oct. 25, 1974)

In weighing the environmental impact of these proposed amendments, the Administrator deemed that the beneficial effects outweighed any potentially adverse effects that were considered.

ASBESTOS

See: 7-0006, Arsenic

BENZIDINE

See: 7-0006, Arsenic

See also: 7-0028, Haloethers

BORON

See: 7-0008, Arsenic

Hellman, Thomas M. and Small, Francis H.

CHARACTERIZATION OF THE ODOR PROPERTIES OF 101 PETROCHEMICALS USING SENSORY METHODS

Air Pollut. Contr. Ass. J. 24 (10): 979-82 (1974)

In measuring air pollutants, odorants present a peculiar problem, depending to a great degree on human subjective response. Described here is the use of a selected odor panel and the use of an "odor fountain" method, which promises accurate results via a simple, reproducible and fast technique. Results tabulated for 101 petrochemical compounds, including 1,4-dioxane, cover the absolute and recognition thresholds, odor index, quality, and hedonic tone.

Harris, Lawrence et al

DIRECT ANALYSIS OF WATER SAMPLES FOR ORGANIC POLLUTANTS WITH GAS CHROMATOGRAPH-MASS SPECTROMETRY

Anal. Chem. 46 (13): 1912-17 (Nov. 1974)

Direct aqueous injection gas chromatography in combination with a computer controlled mass spectrometry detector is a feasible adjunct to conventional solvent analysis, making possible the unambiguous identification of volatile organic pollutants in water and in wastewaters. The more than 30 compounds analyzed by GC/MS included dioxane.

Hand, R. Chris et al

SPECIFIC CONCENTRATIONS OF FLUROALKANES ASSOCIATED WITH LETHAL VERSUS
REVERSIBLE CARDIAC TOXICITY

Abstract of paper presented at the American Heart Assoc., 47th Scientific
Sessions, Dallas, Texas, Nov. 18-21, 1974

For further information on the cardiac toxicity resulting from deliberate inhalation of fluoralkanes, dogs were exposed to trichlorofluoromethane (Freon 11). Under 14.9%, Freon 11 caused no detectable change in cardiac conduction; between 15 and 21%, sino-atrial suppression resulted in atrioventricular dissociation; while exposure to 21.5% or more caused death from electrical asystole. [Abstract in: Circulation 49 and 50 (4, Supp.III): 147 (Oct. 1974)]

Harris, Willard S. et al

CELLULAR MECHANISM FOR THE CARDIAC TOXICITY OF AEROSOL PROPELLANTS

Abstract of paper presented at the American Heart Assoc., 47th Scientific
Sessions, Dallas, Texas, Nov. 18-21, 1974

In an effort to determine the cellular mechanism responsible for the cardiac toxicity associated with Freon aerosol propellants, the effect of F-11 on human erythrocyte membranes was studied, using the inhibition of hypotonic hemolysis as a measure. Comparative studies were conducted on isolated rat and cat papillary muscles. These studies indicated that F-11 depresses ventricular myocardium; dissolves into membranes, depressing cellular function; and should be eliminated from aerosols. [Abstract in: Circulation 49 and 50 (4, Supp.III): 178 (Oct. 1974)]

Trochimowicz, H.J. et al
BLOOD LEVELS OF FLUOROCARBON RELATED TO CARDIAC SENSITIZATION: PART II
Amer. Ind. Hyg. Ass. J. 35 (10): 632-9 (1974)

Blood concentrations of three C₂ fluorocarbons -- trichlorofluoroethane (F-113), dichlorotetrafluoroethane (F-114), and chloropentafluoroethane (F-115) -- were measured in dogs during and after 10-minute inhalations. A rapid increase in concentration occurred during the first 5 minutes; concentration then increased slowly or not at all for the remaining exposure period. When exposure was terminated, fluoro carbon concentration decreased quickly, then declined more slowly. Arterial-venous differences in concentrations, during and after exposure, indicate a tissue uptake of fluorocarbons. Results, compared with the sensitizing blood levels reported for C₁ fluorocarbons (F-11 and 12), indicate that the C₂ fluorocarbons can sensitize dog heart at lower concentrations than the C₁ compounds.

Anon
AS THE UPSHOT...
Soap. Cosmet. Chem. Spec. 50 (10): 22 (1974)

Aerosol manufacturers will support research, coordinated by the Manufacturing Chemists Association, on various facets related to the possibility of ozone depletion at high altitudes by aerosol fluorocarbon propellants. A recently reported study (London and Kelly, in Nature, May 1974) indicated that the concentration of ozone at high altitudes increased more than 7% in the 13-year period of peak fluorocarbon production.

Anon

MAN-MADE FLUOROCARBONS ARE SHOWING UP IN REMOTE AREAS OF THE WORLD
Environ. Sci. & Technol. 8 (12): 966 (Nov. 1974)

U.S. Naval Res. Lab. reports finding the very biostable trichlorofluoromethane in surface seawater. Air samples showed an average of 61 ppt between Los Angeles and the Arctic in Nov-Dec 1972, and 120 ± 18 ppt near Spitsbergen, Norway, in Jan. 1974.

Kintner, Robert Roy
SUBTLE INTERACTIONS (Letter to Editor)
Env. 16 (9): 41 (Nov. 1974)

Two beauty salons in Sioux Falls, S. Dakota, ban aerosols because they burn "out the furnace or heat exchangers". Other reports indicate the formation of bis-chloromethyl ether, a known carcinogen where room air contains small amounts of hydrogen chloride and formaldehyde.

The burn out of heat exchangers may result from degradation of Freons, which may form hydrogen chloride and fluoride. The use of formaldehyde in beauty salons to sanitize equipment opens the way for the possible co-existence in beauty salons of formaldehyde and hydrogen chloride, which could cause the formation of bis-chloromethyl ether.

Anon

FLUORINE PROPELLANTS: NO SUBSTITUTE

Sci. News 106 (18): 286 (Nov. 2, 1974)

Because of recent reports that chlorinated fluorocarbons may be affecting the earth's protective ozone layer with the attendant suspicion that the chlorine portion of the molecule is responsible for this effect, studies are underway with nonchlorinated fluorocarbon propellants. Now, E. Heckel and C.K. Chu, E. Carolina University, Greenville, N.C., report that when fluorine containing ethanes and ethenes (some commercially used) are exposed to energetic radiation (gamma rays), fluorine is released. The fluorine combines with hydrogen to form hydrofluoric acid, which not only can dissolve sand and etch glass but can cause ulceration of lung tissue if inhaled even in small amounts. In the normal environment, there are various energy sources that could cause fluorine propellants to dissociate. Thus, large-scale use of fluorine propellants is not recommended.

Goodson, Ray
MORE ON BCME DANGER (Letter to Editor)
Chem. Eng. 52 (42): 5 (Oct. 21, 1974)

Commenting on the spontaneous formation of bischloromethyl ether (BCME) from formaldehyde and chloride ion, the author suggests that BCME, a powerful carcinogen, might form in the stomach. He suggests that an oral dose of the urinary antiseptic, hexamethylenetetramine, could react with the H_2O , Cl , and formaldehyde of the stomach to yield BCME.

Anon
OPERATING ROOMS TOXIC?
Chem. Wk. 115 (17): 26 (Oct. 23, 1974)

Female medical room personnel, exposed to such gases as nitrous oxide and halothane, apparently have a higher than normal incidence of spontaneous abortions and birth defects in offspring. Also, wives of physicians exposed to these gases register an increase in birth defect rates. Exposed women also have a higher rate of cancer (except leukemia and lymphoma) than non-exposed women.

Stellman, Jeanne M.
SAFETY CAUTION WITH BCME [BIS(CHLOROMETHYL)ETHER] (Letter to Editor)
Chem. Eng. News 52 (25):3 (1974)

Recently identified as a carcinogen by the Dept. of Labor, bis(chloromethyl) ether can be formed by the reaction of formaldehyde and hydrogen chloride, and by a number of reactions that are sources of hydrogen chloride and formaldehyde, e.g., HCl and hexamethylenetetraamine; HCl and a solution of paraformaldehyde in sulfuric acid, or any acidic solution containing chloride ion and formaldehyde. Therefore, caution should be exercised in working with such reactions.

Anon
STANDARDS UNDER FIRE
Chem. Wk. 115 (18): 14 (Oct. 30, 1974)

On the basis that there is no record that MOCA, methyl chloromethyl ether, and 3,3 -dichlorobenzidine have caused cancer in man, the Polyurethane Manufacturers Assn. and the Synthetic Organic Chemical Manufacturers Assn. have petitioned the U.S. Court of Appeals in Philadelphia to set aside the OSHA-established worker exposure standards for these chemicals.

HALOETHERS

See: 7-0006, Arsenic

7-0023, Fluorocarbons

MOCA

See: 7-0028, Haloethers

Anon
HEALTH RISKS OF MALEIC HYDRAZIDE...
Chem. Eng. News 52 (44): 6 (Nov. 4, 1974)

The General Accounting Office wants EPA and FDA to continue examining the potential health hazards of maleic hydrazide, but those two agencies evidently are not convinced that there is enough evidence to warrant an in-depth review now of this pesticide, considering their "limited research resources".

7-0030
LIQUEFACTION AND GASIFICATION OF COAL

Strelzoff, Samuel
MAKE AMMONIA FROM COAL
Hydrocarbon Process. 53 (10): 133-5 (1974)

The technology and economics of making ammonia from coal are compared with processes using natural gas, naphtha and heavy fuel oil. World ammonia capacity by 1978 should be 77 million tons, requiring the use of all possible feedstocks. Because other petrochemicals are expected to capture most of the available naphtha, heavy fuel oil, and LPG, coal should find an increasing market but adaption of coal technology to modern synthesis gas generating plants argues for coal's competitive position.

7-0031
LIQUEFACTION AND GASIFICATION OF COAL

Buividas, L.J. et al
ALTERNATE AMMONIA FEEDSTOCKS
Chem. Eng. Prog. 70 (10): 21-35 (1974)

Technical and economic factors governing the production of ammonia are reviewed on the basis of feedstock availability and price. For North America and Europe, natural gas feed should be the source of most of the ammonia produced, unless the price of natural gas approaches \$1.00/MM Btu. Then, feedstocks such as heavy oil and coal will be considered.

Anon

PUBLICATIONS AVAILABLE

Energy Resources Rept. 2 (41): 400 (Oct. 4, 1974)

Among Office of Coal Research Reports available from Supt. of Documents,
GPO, Washington, D.C., 20402:

ENVIRONMENTAL FACTORS IN COAL LIQUEFACTION PLANT DESIGN

Ralph M. Parsons Co., Interim Rept. 3 (GPO No. I63.10:82/Int.
3, @ 65¢)

APPLICATION STUDY OF A NUCLEAR COAL SOLUTION GASIFICATION PROCESS FOR
OKLAHOMA COAL

State of Oklahoma, Oklahoma City, R&D Final Rept. No. 86
(GPO No. I63.10:86, @\$7.50)

LOW-Btu GASIFICATION OF COAL FOR ELECTRIC POWER GENERATION

Combustion Engineering, Inc., R&D Rept. No. 83, Interim
Rept. No. 1 (GPO No. I63.10:83/Int. 1, @\$8.35)

Battelle Memorial Institute

LIQUEFACTION AND CHEMICAL REFINING OF COAL

Battelle Energy Information Center, 505 King Ave., Columbus, Ohio 43201

Battelle Memorial Institute offers the second of two state-of-the-art studies
on coal conversion, "Liquefaction and Chemical Refining of Coal." Available
from Battelle Energy Information Center, 505 King Ave., Columbus, Ohio 43201.

Anon

COAL LIQUEFACTION OUTLOOK DESCRIBED

Hydrocarbon Process. 53 (10): 19 (1974)

Gulf Research operates two bench-scale plants capable of converting small amounts of coal into liquid fuel; has started work on a pilot plant; claims high price of crude makes liquefaction of coal economically feasible. The ton-a-day pilot plant should cost about \$1.5 million to construct. Company is taking all necessary precautions to insure environmental protection.

Anon

CONTROL SNG POLLUTION WITH PRESENT TECHNOLOGY

Hydrocarbon Process. 53 (10): 19 (1974)

Waste products from the various coals used in the Synthane process are analyzed in BuMines TPR-76, "Analysis of Tars, Chars, Gases, and Water Found in Effluents from the Synthane Process". Current technology makes it possible to control the contaminants (e.g. carbolic acid, cyanide, and sulfur) in the alkaline byproduct water from coal-based SNG, but new techniques may have to be developed to meet future pollution control requirements. Existing techniques for cleaning waste gases emanating from coal-conversion processes are adequate.

Little, Michael A. and Friedman, Sharon M., eds.
MAN IN THE ECOSYSTEM

Proc. of a Conference, Organized by the Human Adaptability Coordinating Office of the U.S. Natl. Comm. for the International Biological Program, held in Annapolis, Md., May 23-25, 1973. (Oct., 1973)

This first of two conferences, organized to ensure the continuation of man-environment research based on the concept of multidisciplinary and integrated studies had as its theme how to "incorporate man as an integral component of ecosystems studies."

Jamison, Paul L. and Friedman, Sharon M., eds.
ENERGY FLOW IN HUMAN COMMUNITIES

Proc. of a Workshop, Sponsored by the Human Adaptability Coordinating Office, U.S. Internatl. Biological Program, and the Committee on the Biological Bases of Social Behavior, Social Science Res. Council, held in N.Y.C., Jan. 30-Feb. 1, 1974. (Aug., 1974)

Energy flow studies were recommended by participants in a 1973 "Man in the Ecosystem" conference as a means of integrating the study of human communities with the study of the surrounding ecosystems. Included are papers on the implications of energy flow studies for the fields of ecology, human biology and social science: case studies emphasizing methodology; and associated methodological and technical problems.

NAPHTHYLAMINES

See: 7-0006, Arsenic

Keplinger, M.L. et al
TOXICOLOGIC STUDIES OF FOUR FLUORESCENT WHITENING AGENTS
Toxicol. Appl. Pharmacol. 27 (3): 494-506 (1974)

Four fluorescent whitening agents, sodium 2(4-styryl-3-sulfophenyl)-2H-naphtho-[1,2-d]-triazole (Tinopal RBS), disodium 4,4'-bis[(4-anilino-6-morpholino-1,3,5-triazin-2-yl)amino]stilbene-2,2'-disulfonate (Tinopal AMS), disodium 4,4'-bis[[4-anilino-6-(N-methyl-2-hydroxyethylamino)-1,3,5-triazin-2-yl]amino]stilbene-2,2'-disulfonate (Tinopal 5BM), and disodium 4,4'-bis(2-sulfostyryl) biphenyl (Tinopal CBS) were found to have low toxicity orally, dermally, and by inhalation in animal studies. No adverse teratogenic or mutagenic effects occurred. None of the compounds caused irritation or sensitization in the human repeated insult patch test. It is concluded that users of household detergents containing these widely-used FWA's can anticipate no hazards from them.

Anon
PEARLESCENT PIGMENT
Soap, Cosmet. Chem. Spec. 50 (10): 137 (Oct., 1974)

Mallinckrodt offers "Pearl-Glo UVR", as the first pure bismuth oxychloride pearlescent pigment providing resistance to UV light with no need for UV absorbers. The new product disperses easily, adheres well to the skin, and is recommended for such cosmetics as eye shadows and blushers, lipsticks and lip glosses in pressed powders, gels, and other forms.

Lyman, Donald J. et al

TOXICOLOGY OF PLASTIC DEVICES HAVING CONTACT WITH BLOOD

Utah Univ., Salt Lake City. Coll. of Pharmacy. Interim Rept. Aug. 24, 1972-May 1, 1974. (May 1974) (NIH/NHLI-73-2908-B Grant PHS-73-2908)

Toxicological evaluation of PVC and the plasticizer, di(2-ethylhexyl) phthalate (DEHP), concentrated on long range, subtle toxicity potential, but basic acute and subacute studies are also used. Plastic composition studies, metabolite identification, teratogenic studies, analysis of human blood exposed to plastics during hospital procedures are among the studies covered. Plastic components containing DEHP are toxic to L-929 cells in tissue culture. Also, DEHP seems to prevent implantation of fertilized ova in rats and mice, to affect rate and amplitude of contractions in isolated rat hearts, and to be hydrolyzed *in vitro* by liver microsomes and mitochondria but not by cytosol. [Abstract in: Govt. Reports Announcements 74 (19): 46 (Sept. 20, 1974)]

Sugawara, Naoki

TOXIC EFFECT OF A NORMAL SERIES OF PHTHALATE ESTERS ON THE HATCHING OF SHRIMP EGGS

Toxicol. Appl. Pharmacol. 30 (1): 87-9 (Oct. 1974)

Because aquatic ecosystems show an increasing presence of phthalate esters, the effects of the hatching of brine shrimp eggs were studied, using five compounds: dimethyl phthalate (DMP), diethyl phthalate (DEP), dibutyl phthalate (DBP), dihexyl phthalate (DHP), and dioctyl phthalate (DOP). At 10 ppm, neither DMP nor DEP caused any significant effects, but at 50 ppm of DEP a significant decrease in the number of eggs hatched was noted. Order of toxicity was DBP>DEP>DMP.

Anon

A NEW TECHNIQUE FOR RECYCLING POLYURETHANE FOAM SCRAP
Chem. Eng. News 52 (44): 18 (Nov. 4, 1974)

General Motors' new process for recycling polyurethane foam scrap involves thermal hydrolysis of finely divided scrap material in superheated steam at 1 atm and 600°F. Polyols and a diamine in the resulting liquid are recovered and recycled for foam manufacture. Process is similar to one Ford inaugurated in 1972, which hydrolyzes in water at 400°F.

7-0043
SHALE OIL EXTRACTION AND REFINING

Kilburn, Paul D. and Legatski, Max W.
ENVIRONMENTAL PLANNING STARTS WITH PROCESS DEVELOPMENT
Hydrocarbon Process. 53 (10): 95-8 (1974)

Article reviews Colony's project to recover crude from shale as an illustration of good environmental planning. Discusses briefly the shale oil process, air quality control, water quality, disposal of processed shale, and community and regional planning.

[N.B.-Colony recently announced it was suspending its plans for construction of country's planned first commercial oil shale plant. (See: CATS 6-0034)]

7-0044
SHALE OIL EXTRACTION AND REFINING

Anon
SHELL OIL WANTS OUT OF CANADIAN TAR SANDS
Chem. Wk. 115 (19): 19 (Nov. 6, 1974)

Shell Explorer, the wholly owned subsidiary of Shell Oil in the U.S., wants to sell its 50% interest in the project to develop the Athabasca tar sands in Alberta, Canada. Reason given: not enough crude oil may be available for export to the U.S. Alberta had just recently announced postponement of its tar sands development policy. About \$1.5 billion in initial outlay would be required to start production, according to Shell.

Anon

FEA CITES ENERGY/ENVIRONMENT TRADEOFFS IN PROJECT INDEPENDENCE 'BLUEPRINT'
Land and the Environ. 2 (23): 181 (Nov. 15, 1974)

Reviewing the pros and cons of alternative energy possibilities, the Federal Energy Administration's "Project Independence Report," released 12 Nov. 1974, considers the environmental impact of oil shale development. Excessive demands on water supplies in the Rocky Mountain States, serious solid waste disposal problems, and an effect on water quality are among considerations. Production of 1 million barrels/day would disrupt about 29,000 acres.

Anon

AIR-JET VENTILATION TO PROTECT WORKERS FROM VCM EXPOSURE
Chem. Wk. 115 (19): 35 (Nov. 6, 1974)

KemaNord's PVC plant, Stockvin, Sweden, will try air-jet ventilation to protect workers from exposure to vinyl chloride monomer. Using 1 in. to 2 in. nozzles, like those found in sterile operating rooms in hospitals, KemaNord expects to ventilate its plant to meet Sweden's new 1-ppm VCM exposure limit.

In Norway, Norsk Hydro will reopen its Heroya PVC plant, making PVC in closed autoclaves. After a trial run, which hopefully will permit production of PVC within permitted emissions limit, the entire Heroya plant will be rebuilt.

Anon

VCM WASTE IS NOT FOR BURNING
Chem. Wk. 115 (19): 31 (Nov. 6, 1974)

B.F. Goodrich Chemical has switched from high-temperature incineration to an in-house-developed fluid bed catalytic oxidation unit to destroy the (25 million lb/yr) hard-to-dispose-of chlorinated wastes generated at its 1 billion lbs/yr vinyl chloride monomer plant at Calvert City, Ky. The system also saves energy and recovers chlorine.

Anon

SWEDEN HAS FOLLOWED THE U.S. LEAD ON VINYL CHLORIDE EXPOSURE LIMITS
Chem. Wk. 115 (18): 31 (Oct. 30, 1974)

Sweden's Occupational Health and Safety Board has established a 1-ppm maximum exposure limit (for an 8-hr workday) for VCM, effective 1 Jan. 1975. KemaNord doubts that it can comply, although the company has met the current 20-ppm limit; will seek a variance.

Anon

BFG TO CUT VINYL CHLORIDE EXPOSURE
Chem. Eng. News 52 (45): 5 (Nov. 11, 1974)

B.F. Goodrich will spend \$42 million in the next three to four years to reduce vinyl chloride concentrations in its plants "to the lowest levels attainable with currently feasible technology," but claims that even with that expenditure it will not be able to meet OSHA's standards of 1 and 5 ppm.

Workers at Uniroyal's PVC plant, Painesville, Ohio, are on strike, after asking for a 75¢/hr increase partly as "vinyl chloride hazard pay," and after failing to get agreement on "changes in working conditions related to vinyl chloride."

VINYL CHLORIDE

See: 7-0006, Arsenic
*7-0040, Phthalates

Anon

POWER PLANTS MAY BE MAJOR OZONE SOURCE

Chem. Eng. News 52 (43): 22, 27 (Oct. 28, 1974)

The source of ozone, which may be the one pollutant most injurious to vegetation, has not yet been clearly delineated. Recent studies indicate that the source is probably electric power generating plants. Apparently, the sulfur dioxides and nitrogen oxides produced participate in an unusual series of free radical reactions that ultimately produce high ozone levels far from the plant sites. Airborne samplings tests were made by scientists at the University of Maryland, College Park.

Passwater, Richard A.

ANTIOXIDANT PROTECTION (Letter to Editor)

Chem. Eng. News 52 (43): 3 (Oct. 28, 1974)

To protect against the possibility of skin cancer from the potential reduction of the protective atmospheric ozone layer, the author points out that Vitamin E (tocopherol) has been shown to protect laboratory animals against skin cancer induced by either carcinogens or ultraviolet radiation.

Kaplan, S.J. and Kivy-Rosenberg, E., eds.
ECOLOGY AND THE QUALITY OF LIFE
Charles C. Thomas, 301-327 E. Lawrence Ave., Springfield, Ill. 62717.
1974. 308pp. \$14.75

Air and water pollutants are discussed in relation to their sources, control, and health and economic effects -- all on a global scale.

Alarie, Y. et al
SENSORY IRRITATION EVOKED BY PLASTIC DECOMPOSITION PRODUCTS
Amer. Ind. Hyg. Ass. J. 35 (10): 654-61 (1974)

Polystyrene sheets, polystyrene foams, and polycarbonate sheets were burned under conditions described, and the effects of their decomposition products on mice were examined. On the basis of RD₅₀ values and the resulting dose-response relationship, transparent polystyrene evoked the greatest sensory irritation, followed by styrofoam, and then by polycarbonate. Addition of diphenylamino-chloroarsine, a known sensory irritant, to polystyrene before burning, reaction time and degree of reaction was similar to that of untreated polystyrene, but recovery after termination of exposure was slower. The method was judged to be satisfactory for measuring one of the actions of combustion products on one part of the respiratory tract.

Anon
HOW TO SAMPLE PESTICIDES -- SMOKE CIGARETTES
N.Y. State Environ. 4 (5): 3 (Nov. 1, 1974)

Pesticide residues on cigarette tobaccos may reach the smoker's lungs, according to Dr. H.W. Dorough, Univ. of Kentucky. The pesticides are not trapped by normal filters in cigarettes, nor are they affected by the 850° C temperatures at the tips of a burning cigarette.

Clark, Robert C., Jr. et al
ACUTE EFFECTS OF OUTBOARD MOTOR EFFLUENT ON TWO MARINE SHELLFISH
Environ. Sci. Technol. 8 (12): 1009-14 (Nov. 1974)

Mussels, and to a lesser degree, oysters experienced physiological stress, degeneration of gill tissue, and uptake of paraffin hydrocarbons after exposure to the effluent from a two-cycle outboard motor. Apparently, small amounts of petroleum may be harmful to mussels; chronic exposures may adversely affect oysters.

Shea, Kevin P.
NERVE DAMAGE
Env. 16 (9): 6-10 (Nov. 1974)

An insecticide, known in Egypt as leptophos and in the U.S. as Phosvel, which is manufactured by Velsicol Chemical Company, is now being considered for registration in the U.S. The author points out that this insecticide may have caused a mysterious epidemic of paralysis of water buffaloes in Egypt in 1971, when 1200 to 1300 animals died. The delayed neurotoxic effects of Phosvel make its handling hazardous; its persistence, its relatively low immediate toxicity, and the fact that a victim may not sense the fact of exposure to a paralyzing dose indicate potential hazards from widespread use.

Mention is made of previous human poisonings from tri-ortho-cresylphosphate (TOCP), which is a delayed nerve poisoning chemical, used as a plasticizer or in applications requiring high-temperature resistant oils.

Darmer, Kenneth I. et al
ACUTE TOXICITY IN RATS AND MICE EXPOSED TO HYDROGEN CHLORIDE GAS AND AEROSOLS
Amer. Ind. Hyg. Ass. J. 35 (10): 623-31 (1974)

Rats and mice were exposed to varying concentrations of HCl gas and HCl aerosol for periods of 5 and 30 minutes to establish the acute toxicity (LC₅₀) values of HCl, which is a combustion product of some rocket and missile engines. Another study objective was to assess the potential hazard of the aerosol foam versus the gaseous. Both forms exhibited comparable toxicity in rats and mice, acting primarily on the respiratory tract. When compared with other results of HCl gas toxicity in rabbits and guinea pigs, the gas produces comparable toxicity in mice, rabbits, and guinea pigs, but affects rats to a lesser degree.

Anon

EPA TO HOLD HEARINGS ON PLUTONIUM REGULATIONS
Sci. & Government Rept. IV (19): 8 (Nov. 1, 1974)

EPA has set December 10, 1974, as the date for public hearings on the adequacy of regulations governing release of plutonium into the environment. Topics to be covered include the health effects of exposure to plutonium, whether AEC's standards are based on correct biological data, etc.

7-0059
GENERAL INFORMATION

Anon

WATER CHLORINATION, CANCER LINK FOUND
Chem. Eng. News 52 (45): 5 (Nov. 11, 1974)

Chloroform and carbon tetrachloride, reported by EPA to be present in the ppb range of concentration in the drinking waters of Cincinnati and New Orleans, have shown carcinogenic effects in animals but, as yet, not in humans. EPA plans to study the extent of the chemical contribution of chlorination to drinking water; indicates other organic chlorinated compounds may add to the chlorine in the water. One scientist questions the possibility chloroform or carbon tetrachloride being carcinogenic.

Anon

TRACE METAL POLLUTANTS IN WATER CAN BE DETECTED

Chem. Eng. News 52 (45): 13 (Nov. 11, 1974)

X-ray fluorescence, previously used to detect air contaminants, can also serve for the quantitative analysis of trace metals in water, according to the Naval Research Lab. The technique is useful for metals of higher atomic weight than calcium.

Anon

THE MYSTERY . . .

Env. 16 (9): 22 (Nov. 1974)

Dioxin, a contaminant of the herbicide 2,4,5-T, has been pinpointed as the cause of animal deaths and illness in two young girls, all occurring in eastern Missouri for a 2-year period starting in 1971. The contaminated herbicide was traced to a salvaged motor oil used as a dust damper in local horse stables. The high concentration of dioxin in the herbicide suggests that use of that herbicide batch would have presented a public hazard.

Anon

SPECIFY TEST PROCEDURES. . .
Chem. Wk. 115 (18): 31 (Oct. 30, 1974)

A \$3-million suit brought by New Jersey's Dept. of Environmental Protection against Midland Glass for emissions of particulates above permitted levels was dismissed by the Superior Court because the DEP had not specified the particular monitoring procedure that should have been used. Three different monitoring methods were available.

REGULATIONS AND STANDARDS

See: *7-0010, Asbestos

*7-0015, Asbestos

.7-0058, General Information

8-0001
ARSENIC

Natusch, David F.S. and Wallace, John :.
URBAN AEROSOL TOXICITY: THE INFLUENCE OF PARTICLE SIZE
Science 186 (4165): 695-9 (Nov. 22, 1974)

The potential toxicity of urban aerosols is governed to a great extent by particle size, and is dependent upon the particular chemical species (e.g., lead cadmium, antimony) of respirable particles. Another contributing factor is surface adsorption. Smaller particles, particularly those less than 1 μ m in size, tend to be more toxic than larger particles. In general, organic species, which are very likely to be adsorbed, predominate in particles which are deposited primarily in the lung. Arsenic is one of the many potentially toxic trace elements discussed in light of the above considerations.

8-0002
ARSENIC

Anon
A BARRAGE OF NEW WORKPLACE EXPOSURE STANDARDS FOR CHEMICALS...
Chem. Wk. 115 (22): 14 (Nov. 27, 1974)

OSHA is readying a series of proposed workplace exposure standards for benzene, beryllium, lead, arsenic, trichloroethylene, and toluene diisocyanate to be announced within a month or so. Later, carbon monoxide, sulfur dioxide, and mercury will be added to the list. Currently, emphasis is on benzene to which 2 million workers may be exposed.

Anon
CRACKDOWN ON ARSENIC
Chem. Wk. 115 (22): 22 (Nov. 27, 1974)

The no-detectable limit for inorganic arsenic in the workplace recently recommended by NIOSH follows studies implicating arsenic as a carcinogen. Records indicate that former workers of Dow Chemical and Allied Chemical, who had been exposed to arsenic, had a high incidence of lung and lymphatic cancer.

As many as 1.5 million workers in the U.S. may be exposed to arsenic which is used at the rate of 25,000-30,000 tons/year. Possible sources of exposure: textile printing, dye manufacture, glass making, defoliants, pesticides, and herbicides.

Knoth, W.
COMMENTS REGARDING THE PAPER "MULTIPLE BASAL CELL CARCINOMA CAUSED BY ARSENIC IN THE FETAL PERIOD"
Der Hautarzt 25 (9): 459 (Sept. 1974) (in German)

The author comments on the paper of the above title, by H.J. Aldick and H. Fabry, which appeared in "Der Hautarzt 24, 496 (1973) and was the report of a 32-year old man with multiple basal cell carcinoma whose mother as a psoriatic evidenced "Fowler-loss" in her pregnancy. Mention is made of tests (re "Fowler-loss") by G. Ehlers et al in 1965 on mice. The experiments showed that the test-time of the birth of the young mice of the "psor-intern" and Fowler groups was important especially with regard to the occurrence of metastatic tumors. (Rough translation).

LaFleur, P.D.

REFERENCE MATERIALS FOR THE DETERMINATION OF TRACE ELEMENTS IN BIOLOGICAL FLUIDS
Natl. Bur. Stds. Final Rept., Dec., 1973 (NBSIR-73-406)(COM-74-11352/3GA)

The preparation of a number of reference materials for the analysis of trace elements in biological standards is described. The standards produced include mercury in urine at three concentration levels, five elements (Se, Cu, As, Ni, Cr) in freeze-dried urine at two levels, fluorine in freeze-dried urine at two levels, and lead in whole blood at two concentration levels. These reference materials have been analyzed for the element(s) of interest by one or more analytical techniques, and are supplied with known concentration levels. [Abstract in: Govt. Repts. Announcement 74 (20): 53 (Oct. 4, 1974)]

*8-0006
ASBESTOS
(Production)

Anon

UC REDUCES PHENOLIC LINE

Mod. Plast. 51 (11): 142 (Nov. (1974)

Asbestos-filled heat-resistant materials will join one-step phenolic molding materials as discontinued products of Union Carbide Corp., Bound Brook, N.J. Continued production would require excessive additional capital investment.

*8-0007
ASBESTOS

Anon

U.S. DECISION TO PERMIT CONSUMPTION OF SALT FROM CHLORINE MANUFACTURE...

Chem. Wk. 115 (21): 63 (Nov. 20, 1974)

The Salt Institute and the Ralph Nader-sponsored Maryland Public Interest Research Group have joined forces in protesting FDA's decision to permit chlorine manufacturing companies to offer salt left over from their electrolytic process as table salt. Because of an asbestos diaphragm used in chlorine manufacture, they claim that the left-over salt could contain up to 333 ppm by weight of asbestos, a proven airborne carcinogen. More information is needed on the effects of asbestos in food and water.

Anon

TABLE SALT CONTAMINATED WITH ASBESTOS PARTICLES?

Chem. Eng. 81 (25): 36 (Nov. 25, 1974)

FDA is readying a formal response to an accusation by the Salt Institute and a Nader group that FDA is permitting asbestos contamination by allowing chlorine manufacturers to sell salt left over from chlorine manufacture (in which an asbestos diaphragm is used). FDA claims that all such salt, sold as food-grade, would have to meet purity specifications, and that new analytical methods permit detection of small amounts of asbestos.

According to the Chlorine Institute, most manufacturers would prefer to recycle salt to the chlorine cells than to sell it.

ASBESTOS

See also: 8-0042, Vinyl Chloride

Spielholz, Gerald I. et al

DETERMINATION OF TOTAL BORON IN SEA WATER BY ATOMIC ABSORPTION SPECTROSCOPY

Mikrochimica Acta, No.4, 649-52 (1974)

Atomic absorption spectroscopy can provide a simple, fast, and accurate means for detecting boron in sea water, if the water sample is boiled to concentrate the boron, and the boiling is followed by chelation and extraction with 2-ethyl-1,3-hexanediol in methyl iso-butyl ketone. The method is accurate, when checked against a standard colorimetric method.

Jackson, Ted F. and Halbert, F.L.

A TOXIC SYNDROME ASSOCIATED WITH THE FEEDING OF POLYBROMINATED BIPHENYL-CONTAMINATED PROTEIN CONCENTRATE TO DAIRY CATTLE

J. Am. Vet. Med. Assoc. 165 (5): 437-9 (Sept. 1, 1974)

Anorexia, decreased milk production, lameness, liver abscesses, and deaths in a Michigan dairy herd traced to feed found to contain a polybrominated biphenyl, a compound used as a flame retardant in the textile industry.

Kociba, R.J. et al
1,4-DIOXANE. I. RESULTS OF A 2-YEAR INGESTION STUDY IN RATS
Toxicol. Appl. Pharmacol. 30 (2): 275-86 (Nov., 1974)

Toxic effects of 1,4-dioxane were dose-related, according to this study in which rats were given drinking water containing 0, 0.01, 0.1, or 1.0% of the compound for up to 716 days. Body weights of rats receiving the two lower doses did not differ significantly from the controls. Weights of rats receiving 1.0% (1015 and 1599 mg/kg/day for males and females, respectively) were significantly lowered, although liver weight and liver weight: body weight ratio were higher. Post-mortem examination of the tissues of rats given the two higher doses showed renal tubular epithelial and hepatocellular degeneration, which was accompanied by regenerative activity. Rats maintained on the 0.01% dioxane in water experienced none of these changes. Rats receiving water containing 1.0% dioxane had the highest incidence of hepatic tumors, and some nasal tumors. The lower dose did not seem to induce tumors.

8-0012
DIOXANE

Torkelson, T.R. et al
1,4-DIOXANE. II. RESULTS OF A 2-YEAR INHALATION STUDY IN RATS
Toxicol. Appl. Pharmacol. 30 (2): 287-98 (Nov., 1974)

Demeanor, growth and mortality rate did not seem to be affected, when rats inhaled 1,4-dioxane at 111 ppm for 7 hr/day for 5 days/week over a 2 year period. No untoward hematological effects, lesions, hepatic or nasal carcinomas were noted. There was no significant statistical difference in the incidence of tumors, compared to controls.

Roberts, Earl J. and Rowland, Stanley P.
FLAME RETARDATION OF TEXTILES BY CROSSLINKING HALO PHOSPHORUS COMPOUNDS WITH POLY-ETHYLENIMINE

Dept. Agr., Wash., D.C. [Pat. Appl. filed Jan. 11, 1974. (Pat. C1-260-932)] (Pat-App1-432 801)

The patent application relates to a method of chemically modifying polyethylenimine by formulating it with chlorine-containing organic phosphorus compounds. Polymers are obtained which may be crosslinked in fabrics composed of cellulosic and other fibers to form polymers which are insoluble in water, acids, and bases, as well as organic solvents. The in situ crosslinked polyethylenimine formulations are useful for imparting flame retardance to combustible fabrics textiles, for removing acidic substances from liquids or gases, and for complexing heavy metals for aqueous solutions. An exemplary chlorophosphorus compound is tris-(dichloroisopropyl) phosphate. [Abstract in: Govt. Repts. Announcements, p.123 (Oct. 4, 1974)]

Anon

A PROCESS FOR LAMINATING PANELS WITH FROTHING ISOCYANURATE FOAMS
Chem. Wk. 115 (21): 64 (Nov. 20, 1974)

Rubicon Chemicals, Naugatuck, Conn., announces a new method, Rubifroth, for laminating panels with frothing isocyanurate foams. The resulting product, in which the foam is sandwiched between panels of flat steel, corrugated polyester glass-fiber, aluminum, hardboard, etc., is claimed to be more fire resistant than rigid urethane foam. Twelve firms have signed a no-charge, secrecy, agreement for use of the method.

Anon

FLAME RETARDANTS, Ag CHEMICALS FUEL BROMINE SALES
Chem. Wk. 115 (22): 26-7 (Nov. 27, 1974)

Decline in bromine use in anti-knock compounds is offset by such markets as flame retardants, agricultural chemicals and water and sewage treatment. World market for brominated flame retardants may grow to at least 4 times the 1973 level, believed to be 65 million lbs. worth \$30 million.

FLAME RETARDANTS

See: 8-0010, Brominated Biphenyls
8-0013, Ethyleneimine

Bussard, David A. et al

FETAL CHANGES IN HAMSTERS ANESTHETIZED WITH NITROUS OXIDE AND HALOTHANE
Anesthesiology 41 (3): 275-8 (Sept. 1974)

Inhalation by pregnant hamsters of 60% nitrous oxide plus 0.6% halothane for 3 hr/day on days 9-11 of gestation resulted in a significant increase in resorptions in those anesthetized on day 11. Hamsters anesthetized on days 10 and 11 showed decreased fetal weight and indications of developmental retardation. Although these data cannot be exactly extrapolated to humans, they indicate that, when possible, administration of inhalation anesthetics should be avoided during early pregnancy in humans.

Anon

INDUSTRY RESEARCH

Aerosol Age 19 (11): 8 (1974)

The Aerosol Education Board reported at the Inter-Industry Aerosol Safety Conference, Washington, D.C. on six studies. Completed studies include: exposure of humans with no adverse effects to one, two and eight hours of varying concentrations of propellant 11 or 12 or a mixture of the two (at OSHA level), under the direction of Dr. Richard Stewart, Medical College of Wisconsin; attempt by Dr. David Blake, Johns Hopkins University, to identify any chemicals formed by fluorocarbon propellants if they were to react to body chemicals, in which tests on animals and humans showed none of these chemicals, or metabolites, and revealed no long-term storage of gases in the organs or fluids of the body; and a study by Dr. Nancy Flowers, Medical College of Georgia, to determine reversible and irreversible limits for fluorocarbon effects on the cardiac electrical system.

Anon

PRESSURE ON AEROSOLS

Chem. Wk. 115 (22): 22 (Nov. 27, 1974)

The Natural Resources Defense Council requested the Consumer Product Safety Commission to ban the use of fluorocarbon aerosol spray propellants, citing the potential of a 16% depletion of the stratospheric ozone layer within 25 years with the ensuing result of 100,000 to 300,000 additional cases of skin cancer in the U.S. and 500,000 to 1.5 million worldwide.

Anon

THREAT TO THE SEASON IN THE SUN?

Chem. Wk. 115 (21): 68, 71 (Nov. 20, 1974)

Brief review of the controversy over fluorocarbon aerosol/ozone depletion and of the research underway to determine validity of the thesis. D.M. Hunten of the National Science Foundation's Kitt Peak Observatory wants to ban the use of chlorofluoromethanes, estimated U.S. production of which was 831 million lbs. in 1973 and 403 million lbs. in the first six months of 1974.

Anon

EXPLORING STRATOSPHERIC CHEMISTRY

Aerosol Age 19 (11): 14-15, 41 (1974)

Industry-sponsored research on fluorocarbons, administered by the Manufacturing Chemists Association, has to date shown no evidence of any harmful effect of fluorocarbons on the environment, but rather a stability, even under intense radiation, in the presence of natural and man-made pollutants.

Anon

DRINKING-WATER SUPPLY IS IMPLICATED IN CANCER-RELATED STUDIES. . .
Chem. Eng. 81 (25): 36 (Nov. 25, 1974)

EPA reports the findings of trace amounts of 66 organic chemicals, some of which are potential carcinogens, in New Orleans drinking water. Compounds mentioned included dieldrin, chloronitrobenzene, and bis-chloroethyl ether. Possible sources: effluents from chemical plants, agricultural runoff to the Mississippi, or chlorinated compounds resulting from chlorination of water supplies. Similar findings are reported for several other localities.

Additionally, a New Orleans Environmental Defense Fund study indicates that there are 15 to 25% fewer deaths from cancer (excluding lung cancer) among local white males drinking water from groundwater sources than among those drinking Mississippi water.

Item in entirety

8-0022
HALOETHERS

Wong, Eugene G.C. et al
NEPHROTOXICITY ASSOCIATED WITH USE OF METHOXYFLURANE
Nephron 13 (2): 174-82 (1974)

Methoxyflurane anesthesia caused acute renal failure in two patients, who developed polyuria immediately after anesthesia and then became markedly oliguric 7-10 days later. Diuresis occurred after several weeks with slow recovery of adequate renal function.

Saarnivaara, L. and Rosenberg, P.H.
CARDIORESPIRATORY AND RENAL EFFECTS OF METHOXYFLURANE ANAESTHESIA IN MIDDLE
EAR OPERATIONS
Anaesthesist 23 (8): 334-9 (1974)

No untoward cardiovascular or renal effects were noted in a study of 25 healthy premedicated patients who were administered methoxyflurane anesthesia for middle ear operations.

Stonard, M.D.

EXPERIMENTAL HEPATIC PORPHYRIA INDUCED BY HEXACHLOROBENZENE AS A MODEL FOR
HUMAN SYMPTOMATIC PORPHYRIA

Br. J. Haematology 27 (4): 617-25 (Aug. 1974)

An outbreak of human symptomatic porphyria in Turkey, which was traced to ingestion of wheat that had been treated with the fungicide hexachlorobenzene (HCB), led to animal studies that showed that chronic ingestion of HCB produces a disturbance of porphyrin metabolism. In the rat, this disturbance was similar to that of human symptomatic cutaneous hepatic porphyria.

In the study reported here, rats fed diets containing HCB for 45 days showed a marked increase in liver to body weight ratio and progressive accumulation of HCB in the liver. Continued feeding caused a disturbance of porphyrin metabolism. Biochemical similarities between the human disease and the experimental HCB model were confirmed, indicating the usefulness of the HCB model for study of the human disease.

Schwetz, B.A. et al

REPRODUCTION STUDY IN JAPANESE QUAIL FED HEXACHLOROBUTADIENE FOR 90 DAYS

Toxicol. Appl. Pharmacol. 30 (2): 255-65 (Nov., 1974)

Japanese quail fed diets containing from 0.3 to 30 ppm of hexachlorobutadiene (HCBD) or 20 ppm of hexachlorobenzene (HCB) for 90 days showed no signs of toxicity and no change of reproductive performance associated with HCBD or HCB. However, the survival of chicks hatched from eggs from quail on the HCB diet was significantly decreased.

Anon

A THREATENED SHORTAGE IN AN EXOTIC ROCKET FUEL. . .
Chem. Wk. 115 (21): 45 (Nov. 20, 1974)

Nitrosodimethylamine is a potential carcinogen, according to OSHA. Because of this finding, the U.S. faces a shortage of unsymmetrical dimethylhydrazine (UMDH), the rocket fuel used in the Delta and Titan launch vehicles.

Nitrosodimethylamine is used to make UMDH, which is supplied only by FMC Corp. FMC has closed its Baltimore plant to change over to a closed process that permits production without human contact. The plant will be opened again in the Spring of 1975, but FMC then plans to stop production completely, after producing 3 million lbs. of UMDH, which will only meet demand to 1977.

Nelsen, S.F. and Buschek, J.M.

PHOTOELECTRON SPECTRA OF HYDRAZINES. IV. EMPIRICAL ESTIMATION OF LONE PAIR-LONE PAIR DIHEDRAL ANGLES AND PREDICTION OF LONE PAIR IONIZATION POTENTIALS FOR SOME CYCLIC AND BICYCLIC HYDRAZINES

J. Amer. Chem. Soc. 96 (22): 6982-7 (Oct. 30, 1974)

Calculations for the determination of hydrazine conformations are described, which are fairly successful for cyclic hydrazines of low Δ value but unsatisfactory for the tetraalkylhydrazines with large Δ values.

*8-0028
HYDRAZINE

Nelsen, S.F. and Buschek, J.M.
PHOTOELECTRON SPECTRA OF HYDRAZINES. V. PYRAZOLIDINE AND HEXAHYDROPYRIDAZINE
DERIVATIVES
J. Amer. Chem. Soc. 96 (22): 6987-93 (Oct. 30, 1974)

Conformational information derived from the pes of 1,2-cycloalkylhydrazines
is discussed and compared with results derived from other methods.

*8-0029
HYDRAZINE

Yaws, Carl L. et al
AMMONIA AND HYDRAZINE
Chem. Eng. 81 (25): 91-100 (Nov. 25, 1974)

Experimental and calculated physical and thermodynamic data for ammonia and
hydrazine -- for both the liquid and gas states -- over a wide range of
temperatures are presented.

Anon
SAFE URETHANE PLANT
Mod. Plast. 51 (11): 142 (1974)

Kryptonics Inc.'s new urethane plant in Boulder, Colorado, built at a cost of about \$500,000 to meet OSHA's new safety regulations on the use of toluene diisocyanate (TDI) and 4,4'-methylenebis(2-chloroaniline) (MOCA), reputedly meets OSHA's stringent regulations. The company must use the MOCA curing agent for the urethane conveyor rollers and other parts that it produces.

ISOCYANATES

See: 8-0002, Arsenic
8-0014, Flame Retardants

8-0031
LIQUEFACTION AND GASIFICATION OF COAL

Anon

EXTRACTION OF UNDERGROUND COAL AS LIQUID. . .
Chem. Wk. 115 (22): 43 (Nov. 27, 1974)

New Mexico Institute of Mining and Technology will work with the New Mexico Bureau of Mines and Mineral Resources to develop an underground coal liquefaction process that resembles the Frasch process for extracting sulfur. Researchers plan to analyze the state's deep bituminous coal reserves; determine optimum temperatures, pressures, and solvent compositions; and seek ways to prevent loss of coal, solvent and hydrogen by sealing the mine area.

8-0032
LIQUEFACTION AND GASIFICATION OF COAL

Anon

COSTS GROWING FOR COAL-BASED SNG PLANTS
Hydrocarbon Process. 53 (9): 15 (Sept. 1974)

Western Gasification Co., New Mexico, awaits FPC approval for a coal gasification plant expected to produce 250 MMcfd of SNG in 1977. In 1972, project cost estimate was \$390 million with completion date of 1976. Now, estimate is over \$500 million with 1977 date. More than 13% of cost is for environmental control.

8-0033
LIQUEFACTION AND GASIFICATION OF COAL

Anon

EVALUATION OF COAL-GASIFICATION TECHNOLOGY, PART I. PIPELINE-W QUALITY GAS
Natl. Acad. of Engineering, Wash., D.C., Interim Rpt. June 1971-Dec. 1972
(Apr. 1973). (OCR-74-INT-1). (Contract DI-14-32-0001-1216). PB-234 036/2GA

The report discusses coal gasification for production of pipeline gas. Included are sections on the natural gas shortage and projected needs, cost estimates (capitalized and operating), brief descriptions and specific problems of eight gasification processes, and recommendations for future research and development. [Abstract in: Govt. Repts. Announc. 74 (20): 72 (Nov. 4, 1974)]

8-0034
LIQUEFACTION AND GASIFICATION OF COAL

Grainger, Leslie
OUR FUTURE DEPENDENCE ON COAL
Chem. Ind. (18): 737-41 (Sept. 21, 1974)

This review article states that future coal conversion processes are based mainly on gasification and liquefaction. Describes some processes briefly.

See: 8-0030, Isocyanates

Anon

DOUBLE DUTY FOR URETHANE

Mod. Plast. 51 (11): 143 (1974)

Clark Door Co., Cranford, N.J., offers "Thermadoor," a combination cold storage/fire door made from 20-gage stainless steel panels with a core of urethane foam. The latter functions as a fire barrier despite its flammability. The door withstands temperatures up to 3000°F. By means of "destructive distillation," the foam prevents flame spread and deformation of the structure. As toxic gases burn off, smoke is ventilated on the fire side and water vapor escapes through built-in ports.

Pacific Gas and Electric will use aluminum-clad urethane foam panels to insulate new oil storage tanks for low-sulfur fuel oil and expects to save up to 10,000 gal/hr (during severe cold) in the amount of fuel needed to keep stored oil flowable. Heat loss will be reduced to 2.5 Btu/hr/cu ft from the approximately 18 Btu/hr/cu ft loss from uninsulated tanks.

POLYURETHANES

See: 8-0014, Flame Retardants

8-0030, Isocyanates

TRICHLOROETHYLENE

See: 8-0002, Arsenic

Anon

WATER SOURCE FOR OIL SHALE DEVELOPMENT

Environ. Rept. 5 (13): 101 (Nov., 12, 1974)

Interior Department's draft report, "Alternative Sources of Water for Prototype Oil Shale Development in Colorado and Utah", is available for review at 3 offices of the Bureau of Reclamation in Wash., D.C., Denver, and Salt Lake City. Includes information on the resolution of water rights for prototype projects, water allocations, and new facilities construction.

Hayakawa, Reinosuke and Wada, Yasaku
THEORY OF THE LOCAL MODE RELAXATION IN THE GLASSY STATE OF POLYMERS
J. Polymer Sci. 12 (10): 2119-34 (Oct. 1974)

The amorphous phase in polymers exhibit multiple relaxation mechanisms, some attributed to motions of the main chain and some to motions of side groups. A theory of the strength of dynamic mechanical and dielectric relaxations stemming from the local modes is offered here. It is hoped that the results will be useful in the assignment of the molecular mechanism for observed relaxations.

Anon
GAS ANALYSIS FOR VINYL CHLORIDE MONOMER
Chem. Ind. (18): 713 (Sept. 21, 1974)

In Britain, under the supervision of the Chemical Industries Association's VC Committee, new sensitive analyzers are being installed in all PVC plants to measure minute traces of vinyl chloride monomer in the plants.

Before 1974, the "colour tube" and the "explosimeter," which are each sensitive down to only 200 ppm were used for air monitoring. Now used are gas chromatography with a sensitivity better than 0.1 ppm, and infrared absorption and flame ionization, which are both better than 1 ppm. Attached to automatic sequential sampling systems, the analyzers sample air from up to 24 points within the plant at a rate of about one per minute.

Under study: equipment using color change techniques and evaluation of simeconductors as gas detectors.

Anon

GOODYEAR TIRE & RUBBER WILL CUT BACK PVC PRODUCTION. . . .
Chem. Eng. 81 (25): 33 (Nov. 25, 1974)

Having determined that the production of polyvinyl chloride at its Niagara Falls plant is not economically feasible, Goodyear Tire & Rubber will slash production 50%. The cutback to a production level of approximately 50 million lb/yr, to meet new compliance standards, will mean the loss of about 60 jobs.

Southwick, Charles A., Jr.

MATERIALS -- WHERE WILL THE FINGER POINT NEXT? VCM AFFAIR -- MEANING TO THE PACKAGER

Mod. Packag. 47 (8): 20-4 (1974)

Using PVC as an example, the author alerts the packager to his present and increasing future responsibilities concerning the use of plastics for foods, drugs and cosmetics and other packaged products in which package-and-product interactions are undesirable.

Plastics characteristics; additives, processing and migrants; and use statistics are discussed. The PVC problem arose with alcoholic beverages because of lack of pre-evaluation of its effects on a food product. Now, evidence of VCM's toxicity and suspicion of carcinogenic activity indicates need for extensive research.

Strickman, Samuel W.
DEPOLYMERIZATION
Rubber Age 106 (11): 53-5 (1974)

Defining depolymerization as the phenomenon of a polymer's breaking down to monomer or some intermediate molecule because of an equilibrium change, the author stresses the need for recognizing the importance of depolymerization in addition to such areas of concern as stability and oxidation.

Among the examples cited: the suspicion of the presence of vinyl chloride monomer, when polyvinyl chloride bottles are used as containers for liquors, may be the result of depolymerization rather than the possibility of unreacted monomer being present because of poor processing. The alcoholic content of the bottles (ethyl and higher alcohols) may exert a catalytic action leading to depolymerization of PVC to produce trace amounts of the monomer. The author recommends a study program on rates of depolymerization of resins.

Anon
OSHA RULING CLEARS THE AIR ON VCM EXPOSURE LEVELS -- OR DOES IT?
Mod. Plast. 51 (11): 20 (1974)

The OSHA standard, establishing a workplace level of 1 ppm averaged over an 8-hr shift (ceiling level of 5 ppm for any 15-min period), is more demanding than anticipated and industry is gearing for a judicial review of the regulation. Industry claims OSHA ignored technological, medical, and economic-impact evidence that indicated the need for less stringent standards. Monomer producers and fabricators will be less affected than PVC producers. About 60% of U.S. PVC plants are 10 years old or more; cannot be retrofitted to comply with a 1 ppm standard. Respirators for workers could impair their visibility. Point is made, however, that asbestos industry, with 1973 sales best ever recorded, has apparently survived tight regulations imposed by OSHA several years ago.

Anon

"SKYROCKETING INFLATION"

Aerosol Age 19 (11): 44 (1974)

The possible shutdown by Government of all PVC resin plants would have a devastating economic impact on the U.S., according to an Arthur D. Little, Inc., study for the Society of the Plastics Industry. Lost domestic production could reach \$65 to \$90 billion, accompanied by the loss of from 1.7 to 2.2 million jobs. Lack of PVC resin would be felt by many industries: packaging, phonograph record, wire, cable, flooring, automobile, and others, plus the building and construction trades, which comprise 25% of the market. In U.S. now, there are 21 separate producers of PVC resin with 36 plants operating.

McCurdy, Patrick P.

MOST OF THE TIME, 'IT' CAN BE DONE (Editorial)

Chem. Wk. 115 (22): 5 (Nov. 27, 1974)

Citing a few past examples that proved the "it-can't-be-done" philosophy wrong, the author disagrees with current industry impression that OSHA's stringent levels on the concentration of vinyl chloride gas in the workplace, can't be met. He suggests that several technical solutions may be imminent: KemaNord will test an air-curtain system in its PVC plant in Stockvim in an effort to comply with Sweden's 1ppm exposure limit, Norsk Hydro will test a closed autoclave system in an attempt to reopen its Heroya, Norway, VC plant; and W.A. Mack, president of Werner & Pfleiderer Corp., has described new compounding techniques for cutting VC content in PVC compounds to OSHA standards.

GENERAL INFORMATION

Berry, James W. et al

CHEMICAL VILLAINS: A BIOLOGY OF POLLUTION

C.V. Mosby Co., 11830 Westline Industrial Drive, St. Louis, Mo. 63141.

Jan. 1974. 190 pp. \$5.75

The vast literature on environmental contaminants is reviewed in light of their effects on humans. Problems and possible solutions are discussed. [Advertisement in: Environ. 16(8): 25 (Oct. 1974)]

GENERAL INFORMATION

Waldbott, George L.

HEALTH EFFECTS OF ENVIRONMENTAL POLLUTANTS

C.V. Mosby Co., 11830 Westline Industrial Drive, St. Louis, Mo. 63141.

1973. 316 pp. \$7.95

The nature and sources of air, water, and food contaminants are described and their effects on humans are discussed by a recognized allergy specialist. Pollutants may be identified as pulmonary irritants, fever-producing agents, asphyxiants, etc. [Advertisement in: Environ. 16 (8): 25 (Oct. 1974)]

Ricci, Larry J.
TEL STAND-INS BEING READIED
Chem. Eng. 81 (25): 40-1 (Nov. 25, 1974)

With tetraethyllead (TEL) branded as a poison to catalytic converters, as a possible health hazard, and under an EPA ban requiring that it be phased out of most gasolines by 1979, work is underway for substitute leadfree antiknock compounds. Two alternatives are Ethyl Corp's methylcyclopentadienyl-manganese tricarbonyl (MMT), which is commercially available, and Molycorp's cerium (2,2,6,6-tetramethyl-3,5-heptanedionate)₄ or Ce(thd)₄. Both compounds, however, are under criticism for adverse effects on engines and catalytic converters, and MMT is being questioned as a possible health hazard.

Petersen, Gerald R. and Milham, Samuel, Jr.
HODGKIN'S DISEASE MORTALITY AND OCCUPATIONAL EXPOSURE TO WOOD
J. Nat. Cancer Inst. 53 (4): 957-8 (Oct. 1974)

The results of a study of the Washington State death record files of all males 20 years and older for 1950-1971, an interview study for 1965-1970, and a proportional mortality rate analysis of the death records showed that 56 deaths occurred from Hodgkin's disease within wood-related occupations (carpenters and their helpers and apprentices, cabinetmakers, papermakers, and sawyers). The study confirms the presence in wood of potential carcinogens.

Dahn Douglas B. et al
TECHNOLOGY FOR MANAGING SPILLS ON LAND AND WATER
Environ. Sci. Technol. 8 (13): 1076-9 (Dec. 1974)

Hazardous spills involve not only oil but other materials such as sulfuric acid, phenol, and acrylonitrile. EPA's Office of Research and Monitoring has demonstrated some promising control methods, including foam-in-place plugs and dams; a mobile, physical-chemical treatment unit; and floatable, activated carbon or ion-exchange resins. Materials most hazardous to the water environment are soluble compounds toxic in the ecosystem at low, critical concentrations, which include acrylonitrile in fourth place on a list ranked by production and toxicity. In a list of 27 common hazardous compounds, ranked by annual production quantity, vinyl chloride is number 23.

Data on the effectiveness of carbon adsorption is presented for some of these compounds, including acrylonitrile. Experimental data comparing effectiveness of ion-exchange resins with carbon for the removal of arsenic are also presented.

Whitacre, R. Wayne and Pearse, Carlton S.
ARSENIC AND THE ENVIRONMENT
Colo. Sch. Mines, Mineral Ind. Bull. 17 (3): 1-19 (1974)

Arsenic, a potent poison, has in times past been used as a pharmaceutical, although such use now is somewhat rare, as is the incidence of any acute arsenical poisoning from natural causes, at least in the U.S. Perhaps because less is known about its distribution, arsenic is not now arousing as much concern as mercury, cadmium, or phosphates as a potential hazard to the environment. The authors caution the mining industry, however, not to underestimate the magnitude of the potential threat of arsenic to the environment.

This article (with a bibliography of 60 references) provides a basic review of arsenic and its relation to a healthy, balanced environment, covering its occurrence in land, water, air, and living organisms; its cultural contributions to the environment; its basic chemistry and toxicology; as well as methods of analysis, standards, and methods of removal from water and air.

Schuth, Carter K. et al
DISTRIBUTION OF ^{14}C AND ARSENIC DERIVED FROM [^{14}C]CACODYLIC ACID IN AN
AQUATIC ECOSYSTEM
J. Agr. Food Chem. 22 (6): 999-1003 (Nov-Dec 1974)

Bioconcentration ratios reported in this study of the distribution, accumulation and degradation of an organoarsenical herbicide, [^{14}C] hydroxdimethylarsine oxide ([^{14}C] cacodylic acid) in aquatic ecosystems containing various soils, water, algae, duckweed, snails, daphnia, catfish, and crayfish indicated that cacodylic acid does not accumulate to a great extent in the aquatic environment.

Davison, Richard L. et al
TRACE ELEMENTS IN FLY ASH
Environ. Sci. Technol. 8 (13): 1107-13 (Dec. 1974)

Spark source mass spectroscopy, optical emission spectrography, atomic absorption spectroscopy, and X-ray fluorescence spectroscopy reveal that concentrations of trace elements in fly ash depend on particle size. Measurements of 25 elements in fly ash from a coal-fired power plant showed that concentrations of arsenic, lead, antimony, cadmium, and six other elements increased significantly with decreasing particle size. Results are discussed in light of their potential environmental impact.

Fowler, Bruce A. and Weissberg, Joseph B.
ARSINE POISONING
New Eng. J. Med. 291 (22): 1171-4 (Nov. 28, 1974)

Exposure to arsine gas is an important environmental health hazard of concern in numerous and diverse occupational circumstances. Arsine causes a rapid and unique hemolysis and may result in oliguric renal failure, which is uniformly fatal without proper therapy. Recent attempts to use geothermal and fossil fuel energy sources high in arsenic content may increase the frequency of arsine exposure.

Processes currently available for converting coal to gas use high temperature, pressure and steam, and may also result in the generation of arsine. Worker engaged in converting mineral energy sources into fuels may risk the hazard of arsine poisoning unless suitable precautions are taken. This report reviews arsine poisoning, with emphasis on its clinical features, pathogenesis and treatment.

See: 9-0001, Acrylonitrile

Lin, George H.Y. et al

ABSOLUTE CONFIGURATION OF CHIRAL O-2-BUTYL ETHYLPHOSPHONOTHIOIC ACID

J. Agr. Food Chem. 22 (6): 1134-5 (Nov-Dec. 1974)

The establishment of the absolute configuration of (-)-O-2-butyl(-)-ethylphosphonothioic acid by x-ray crystallographic analysis of its α -phenylethylammonium salt is reported.

Flowers, Earl S.
RELATIONSHIP BETWEEN EXPOSURE TO ASBESTOS, COLLAGEN FORMATION,
FERRUGINOUS BODIES, AND CARCINOMA
Amer. Ind. Hyg. 35 (11): 724-9 (1974)

Contrary to the popular belief that the various biological and tissue responses elicited by asbestos exposure are totally unrelated, this study delineates possible relationships between asbestos exposure, ferruginous body formation, collagen synthesis, and carcinoma. The relationship is expressed in terms of fundamental effects on the redox state of cells and tissues. Inhalation of asbestos causes a tissue response in which fibers reaching the alveolar spaces are phagocytized. Fiber irritation of the membrane releases cellular constituents containing fibrogenic factor, which in turn stimulates collagen production. While collagen synthesis occurs, asbestos may act as a secondary carcinogen, serving as a carrier for carcinogens.

Anon
TACONITE STIRS BURDEN OF PROOF DEBATE
Chem. Eng. News 52 (48): 14 (Dec. 2, 1974)

Because the U.S. Eighth Circuit Court of Appeals refused to uphold an injunction prohibiting Reserve Mining Co. from dumping taconite tailings, containing asbestoslike fibers, into Lake Superior, Congress is attempting to pass legislation to shift the burden of proof in environmental litigation from the plaintiff to the defendant. Several amendments have been proposed by Rep. Ruffe (did not pass in the House), Sen. Nelson, and Sen. Hart. Industry contends that such legislation, if passed, "will put a company in the impossible position of having to prove that a substance is totally safe."

*9-0009
ASBESTOS

Bowes, D.R.
FOR THOSE IN PERIL: 3 - NOT ONLY ON THE FACTORY FLOOR
Nature 252 (5482): 338 (Nov. 29, 1974)

A cry is raised by Dr. D. R. Bowes, Dept. of Geology, University of Glasgow, for in-depth research, sufficiently well-funded, on the potential health hazards of asbestos and other mineral dusts in the total environment, not just in factories.

*9-0010
ASBESTOS

Anon
ILLINOIS EPA INSTALLS. . . .
Environ. Sci. Technol. 8 (13): 1058 (Dec. 1974)

Because asbestos has been suspect as a carcinogen, the finding of asbestos in Lake Michigan waters has prompted the Illinois EPA to install a sensitive electron microscope to aid in detecting asbestos in Lake Michigan and in other Illinois water supplies. Capable of magnifying objects 200,000 times, the equipment can also distinguish between asbestos and asbestoslike particles.

Zavon, M.R. et al
BENZIDINE EXPOSURE AS A CAUSE OF BLADDER TUMORS
Arch. Environ. Health 27 (1): 1-7 (July 1973)

The development of bladder tumors in 13 of 25 workers engaged in manufacturing benzidine (4,4'-diaminodiphenyl) was most likely caused by exposure to benzidine, but other potentially carcinogenic chemicals are also suspect. The men were exposed to the chemicals over a period of up to 43 years averaging over 13 years of exposure. Benzidine was the one chemical in common to all those exposed.

Early detection and treatment of the cancers may have prevented more deaths than the one recorded up to 1970. [Abstract in: J. Occup. Med. 16 (2): 122 (1974)]

Matthews, P.J.

A SURVEY OF THE BORON CONTENT OF CERTAIN WATERS OF THE GREATER LONDON AREA USING A NOVEL ANALYTICAL METHOD

Water Res. 8 (12): 1021-8 (1974)

A new analytical technique based on the solvent extraction of ferroin borodisalicylate was used to determine the concentration of boron in various types of sewage, sewage effluent and natural waters of greater London. The method was effective in all tests. The resulting data will help in water resource planning. Knowing the concentration of boron in a watercourse may make it possible to determine the degree of dilution of sewage effluent.

Lovelock, J.E.
ATMOSPHERIC HALOCARBONS AND STRATOSPHERIC OZONE
Nature 252 (5481): 292-4 (Nov. 22, 1974)

Although the literature implies that fluorochlorocarbons (FCCs) are the predominant chlorine carriers in the atmosphere, they are in actuality less abundant than other halocarbon classes. A table of observed abundances of halocarbons in western Ireland in mid-1974 shows that the FCCs seemingly contribute 35% of the total halocarbon chlorine entering the stratosphere.

The prompt release of chlorine in the stratosphere from the other, non-FCC, halocarbons implies that the present input of odd chlorine species to the stratosphere is dominated by the simple chlorocarbons CCl_4 , CHCl_3 and CH_3CCl_3 , etc. Unless there is some special additional effects from the release of chlorine at higher altitudes, there are no grounds for singling out the FCCs as more hazardous than the other halocarbons which penetrate the tropopause.

Weare, Bryan C. et al
AEROSOL AND CLIMATE: SOME FURTHER CONSIDERATIONS
Science 186 (4166): 827-8 (Nov. 29, 1974)

Radiative calculations are presented that may help in determining the effect of added aerosols on the heating or cooling of the earth's atmosphere, considering such parameters as atmospheric location, cloud reflectivity, etc.

Anon

ENVIRONMENTALISTS SEEK FLUOROCARBON BAN
Chem. Eng. News 52 (48): 14 (Dec. 2, 1974)

The National Resources Defense Council, N.Y.C., filed a petition with the Consumer Product Safety Commission, Washington, D.C., to ban certain fluorocarbon propellants in aerosol spray cans, referring to studies showing possible depletion of stratospheric ozone by fluorocarbons with an attendant increase in skin cancer cases.

The National Academy of Sciences will conduct a one-year study of the matter.

Anon

NAS LAUNCHES STUDY ON FLUOROCARBONS
Sci. News 106 (22): 341 (Nov. 30, 1974)

A subcommittee of the standing NAS Climatic Impact Committee will study the environmental, public health and economic impacts of the continuation or removal of fluorocarbons from the market because of ozone depletion controversy. Other agencies have studies planned or in progress.

Anon

NAS TO STUDY FLUOROCARBON THREAT TO OZONE

Air/Water Pollution Rept. 12 (47): 466 (Nov. 25, 1974)

It appears that the preliminary report on the potential effect of fluorocarbons on stratospheric ozone, which will be published by a National Academy of Science panel now studying the issue, will recommend a full-scale study to determine if a ban should be placed on the manufacture of the suspect fluorocarbons. The possible ozone depletion could result in an increase of human skin cancers.

Anon

DEFENDS AEROSOL AS LIFE SAVERS

Soap, Cosmet. Chem. Spec. 50 (11): 70, 72 (1974)

In accepting "Packaging Man of Year Award," R.H. Abplanalp attacked exaggerated claims against aerosols, citing the effectiveness of aerosol bronchodilators in reducing the death rate from asthma.

In 1960, the asthma death rate was three for every 100,000 population; in 1970, the death rate was down to nearly one per 100,000.

Anon

DU PONT IS STARTING UP PRODUCTION OF FREONS 113 AND 114
Chem. Wk. 115 (23): 29 (Dec. 4, 1974)

The third unit in Du Pont's new Corpus Christi, Texas, complex is on stream, producing Freons 113 and 114. On 1 April, a chlorocarbons unit went on stream; in mid-May, a 600 tons/day Kel-Chlor chlorine recovery unit was activated. Other units -- a Freon 115, a chlor-alkali plant, and a Freon 22 unit -- are planned for 1975, 1976, and 1978, respectively. Units for Freons 11 and 12 are also planned.

FLUOROCARBONS

See also: 9-0047, General Information

Anon

NEW HOMES FOR NL UNITS

Chem. Wk. 115 (24): 16 (Dec. 11, 1974)

NL Industries reports that many of its specialty chemicals, including flame retardants, are in short supply. Antimony oxides are on back order. New products in development include flame retardants for incorporation into polyester fibers before the fibers are made into yarn, and plastic additives that function both as flame retardants and smoke suppressants.

Harris, Walter D.
BCME DANGER (Letter to Editor)
Chem. Eng. News 52 (48): 3 (Dec. 2, 1974)

In reference to a published suggestion that hexamethylene tetramine might form bischloromethyl ether (BCME) in the stomach because of the hydrochloric acid conditions found there, the author cites G. Della Porta et al ("Food Cosmet. Toxicol.", 6, 707 (1968)). In that study no evidence of carcinogenicity was reported in mice and rats given drinking water containing 1% hexamethylene tetramine over an extended period of time. No information appeared, however, on either the formation or the breakdown (if formed) of BCME.

Kupchan, S. Morris
NOVEL NATURAL PRODUCTS WITH ANTITUMOR ACTIVITY^{1,2}
Fed. Proc. 33 (11): 2298-95 (1974)

New tumor inhibitors of plant origin, which show significant growth-inhibitory properties, are discussed from the standpoint of their chemistry and biochemistry. Among the described compounds are four new maytansinoids, including maytanvaline, a highly-active antileukemic ester, and maytansine (3-bromopropyl) ether.

Neely, W. Brock et al

PARTITION COEFFICIENT TO MEASURE BIOCONCENTRATION POTENTIAL OF ORGANIC
CHEMICALS IN FISH

Environ. Sci. Technol. 8 (13): 1113-15 (Dec. 1974)

The partition coefficient was examined as a means of trying to establish a relationship between the physiochemical properties of a chemical and its ability to bioconcentrate. Hexachlorobenzene, carbon tetrachloride, and several other chemicals, representing a wide range of partition coefficients, were evaluated. Their bioconcentration in trout muscle of these chemicals followed a straight line relationship with partition coefficient. Predicted values of the bioconcentration of other chemicals from their partition agreed well with experimental values in the literature.

Reddy, Bandaru S. et al
COLON CARCINOGENESIS IN GERM-FREE RATS WITH 1,2-DIMETHYLHYDRAZINE AND
N-METHYL-N' NITRO-N-NITROSOGUANIDINE¹
Cancer Res. 34: 2368-73 (Sept. 1974)

Fischer germ-free and conventional female rats were given s.c. injections of 1,2-dimethylhydrazine (DMH) at 10 mg/week/kg body weight to determine the effect of intestinal microflora on the sensitivity of the colon to the carcinogenic effect of DMH. In post-mortem examination immediately after the last injection germ-free rats had no colon tumors; 17% of the conventional rats had adenocarcinomas of the colon. Twenty weeks after the last injection of DMH, adenomas were noted in 11% of germ-free rats; 25% of the conventional rats had colonic tumors, most of which were adenocarcinomas. The other title compound, MNNG, a more direct-acting carcinogen, induced multiple tumors of the colon in both sets of rats. Intestinal microflora, apparently, liberate an active metabolite and produce promoters to modify the effects of DMH in colon carcinogenesis.

Rawls, Rebecca L.
FOREIGN INVESTMENT IN U.S. CHEMICALS RISING
Chem. Eng. News 52 (47): 7-8 (Nov. 25, 1974)

Some of the new investment is coming from companies that previously were only exporters to U.S.; Japanese firms are among newcomers. Among the recent capital investments: Mobay Chemical, the wholly owned U.S. subsidiary of West Germany's Bayer, is trebling capacity of urethane chemicals at Baytown, Texas, and building a 10,000 ton/yr hydrazine hydrate plant at Kansas City, Mo.

Ojanpera, Salme et al
PHOTOREDUCTION BY HYDRAZINIUM IONS, QUENCHING BY HYDRAZINES (Letter to Editor)
J. Amer. Chem. Soc. 96 (23): 7379-80 (Nov. 13, 1974)

The mechanism of photoreduction of aromatic ketones by hydrazinium ions and quenching by hydrazines is discussed. Hydrazines are efficient quenchers of photoexcited ketones in water but are not good photoreducing agents. Some monoprotonated hydrazinium ions are effect photoreducing agents.

HYDRAZINE

See also: 9-0047, General Information

9-0027

LIQUEFACTION AND GASIFICATION OF COAL

Anon

COAL LIQUEFACTION PROJECTS ADVANCE

Coal Age 79 (11): 36 (1974)

Brief description and flow chart of Coalcon Co.'s proposed coal hydrocarbonization process for mix of liquid and gaseous fuels.

9-0028

LIQUEFACTION AND GASIFICATION OF COAL

Anon

ENERGY REPORT URGES SHIFT TO ELECTRICITY

Chem. Eng. News 52 (47): 12-13 (Nov. 25, 1974)

According to FEA's report on Project Independence, R & D on oil shale and synthetic fuels from coal should center on in situ processes for oil recovery because of economics and environmental impacts. Existing technologies, e.g., Lurgi gasification and Fischer-Tropsch liquefaction are not economic; government incentives seen necessary to develop low-cost, efficient technologies.

LIQUEFACTION AND GASIFICATION OF COAL

Frohning, C.D. and Cornils, B.
CHEMICAL FEEDSTOCKS FROM COAL
Hydrocarbon Process. 53 (11): 143-6 (1974)

Fischer-Tropsch synthesis may prove to be the solution to an anticipated dwindling of world petroleum and natural gas sources. Although Europe, because of increasing coal prices, has not been attracted to F-T processes for gasoline production, the method may be the best approach for producing chemical feedstocks in the form of short-chain olefins or naphtha substitutes.

LIQUEFACTION AND GASIFICATION OF COAL

Ferretti, Emmett J.
FEEDING COAL TO PRESSURIZED SYSTEMS
Chem. Eng. 81 (26): 113-6 (Dec. 9, 1974)

High-pressure reactors are seen as necessary for efficient coal liquefaction and gasification processes. Some of the problems inherent in using large amounts of abrasive powdered coal in these reactors are outlined along with some possible answers.

9-0031

LIQUEFACTION AND GASIFICATION OF COAL

Anon

A COAL-GASIFICATION.

Chem. Wk. 115 (23): 39 (Dec. 4, 1974)

Inflation has caused Exxon to delay building its coal-gasification pilot plant in Baytown, Texas, where the company had planned to use its proprietary process to gasify 500 tons/day of coal. Development research will be continued, however.

9-0032

LIQUEFACTION AND GASIFICATION OF COAL

Anon

AND, COAL SEAMS SHOULD BE.

Chem. Eng. 81 (26): 63 (Dec. 9, 1974)

Non-nuclear explosives, detonated at 50-ft depths are expected to provide data on the permeability and other physical properties of a coal deposit in Kemmerer, Wyoming. Researchers at the AEC's Lawrence Livermore Lab. will study the results in an attempt to learn if in situ coal gasification would be easier if coal seams are fractured first.

LIQUEFACTION AND GASIFICATION OF COAL

See: 9-0005, Arsenic

Lichtenstein, E. Paul et al
TRANSLOCATION AND METABOLISM OF [^{14}C]PHORATE AS AFFECTED BY PERCOLATING WATER IN
A MODEL SOIL-PLANT ECOSYSTEM
J. Agr. Food Chem. 22 (6): 991-6 (Nov.-Dec. 1974)

In this model ecosystem, consisting of different type soils, corn plants, and water, the interrelationships of movement and metabolism of [^{14}C] phorate in the soils was studied. Other parameters considered were the effects of water percolating through the soils on these processes, and the penetration, translocation and metabolism of the insecticides in corn grown in the soils. Data are tabulated for the fate and metabolism of the phorate in the different ecosystems described. It appears that the physiological processes of the corn plant are the governing factors in the uptake and translocation of chemicals from soil.

MODEL ECOSYSTEMS

See: 9-0003, Arsenic
See also: 9-0047, General Information

See also: 9-0047, General Information

Schulze, Janos et al
ANALYSIS OF FLUORESCENT WHITENING AGENTS IN U.S. HOME LAUNDRY DETERGENTS
Soap, Cosmet. Chem. Spec. 50 (11): 46+ (1974)

Fluorescent whitening agents (FWA's) find their major uses in the detergent, paper, textile and plastics industries, with over 50% of U.S. consumption going into household detergents. FWA patents number in the thousands; commercial products number in the hundreds; but only a few FWA's are used in significant quantities.

The basic chemical structures used for FWA's are stilbene, coumarin, diphenylpyrazoline, naphtho-triazole, benzoxazole, and distyrylbiphenyl. Article describes methods of qualitative and quantitative analyses used.

Autian, J.

TOXICITY AND HEALTH THREATS OF PHTHALATE ESTERS: REVIEW OF THE LITERATURE
Environ. Health Perspect. pp. 3-25 (1973)

This review of 56 publications (from 1904-1972) on the toxicity and potential health hazards of phthalate ester presents data on their acute toxicity to different animals; covers their absorption, distribution, excretion, and metabolism; describes recorded teratogenic, mutagenic, and carcinogenic effects; and their use in medical devices. It does not, however, provide a definitive evaluation of their threat to the environment in general or to human health.

Paulson, Donald R. and Moran, Gregory F.
ANALYSIS OF SOME TOXIC COMBUSTION PRODUCTS OF LOW-DENSITY FLEXIBLE POLYURETHANE-
ETHER FOAMS
Environ. Sci. Technol. 8 (13): 1116-18 (Dec. 1974)

Low-density flexible polyurethane-ether foams were burned in a combustion cabinet for the purpose of analyzing their toxic combustion products. The more fire retardant the foam, the more CO and HCN were produced per gram of foam consumed. Although phosgene was not detected, the combustion products included the following gases: CO₂, CO, HCN, HCl and COCl₂. Consumers can be assured that there is little danger to them in fires fed only by polyurethane foam.

POLYURETHANES

See #9-0025, Hydrazine

Sirover, Michael A. and Loeb, Lawrence A.
ERRONEOUS BASE-PAIRING INDUCED BY A CHEMICAL CARCINOGEN DURING DNA SYNTHESIS
Nature 252 (5482): 414-16 (29 Nov. 1974)

The stability of binding of chemical carcinogens to DNA in vivo suggests a molecular mechanism for tumor initiation. This interaction may be mutagenic in that it may affect the accuracy with which the modified DNA is copied by cellular DNA polymerases.

β -propiolactone, reported as a potent mutagen and carcinogen that initiates tumors in mice, rats, and hamsters, is an alkylating agent that reacts with guanine and adenine nucleotides in DNA. The authors found that the modification of a synthetic polynucleotide template with β -propiolactone increases the incorporation of non-complementary base-paired nucleotides into DNA with the DNA polymerase from either avian myeloblastosis virus (AMV) or sea urchin embryos.

Lowry, Larry K. et al
BIOLOGICAL INDICATORS OF OCCUPATIONAL EXPOSURE TO TRICHLOROETHYLENE
J. Occup. Med. 16 (2): 98-101 (1974)

Trichloroethylene (TRI), widely used as a solvent in drycleaning and degreasing operations, affects central nervous system (headaches, dizziness, intolerance to alcohol, malaise), when inhaled.

Urinary TCA and TCE, collected before and after a work shift and corrected to a constant creatinine concentration, can be used as biologic monitors of an industrial worker's response to TRI exposure. Urine TCA can indicate cumulative exposure during the work week and TCE can indicate exposure during the workday that the urine samples were collected.

SHALE OIL EXTRACTION AND REFINING

See: 9-0027, Coal Liquefaction and Gasification

Anon
OIL SHALE DEVELOPMENT STILL HAS SUPPORTERS
Chem. Eng. News 52 (47): 16 (Nov. 25, 1974)

Some oil shale development projects are still active. Gulf Oil and Standard Oil (Ind.) report that plans for their joint Rio Blanco Oil Shale Project, Denver, are continuing and they expect initial studies to be finished in six months and a development plan to be ready in about a year. However, Colony Development Operation, a joint venture of Atlantic Richfield and 3 other companies, has discontinued its plans for a plant in Colorado.

Nelson, E.L.
WORLD ENERGY RESOURCES, 1974
Hydrocarbon Process. 53 (11): 62E+ (1974)

In this current, realistic estimate of energy sources, the potential extractable material in North America from shale and tar sands is stated to be estimated as more than twice the total proven reserves of crude oil in the entire world, but exploitation costs and enormous environmental problems hinder rapid development.

Anon

SPI HAS REQUESTED A COURT STAY OF VINYL CHLORIDE OCCUPATIONAL EXPOSURE STANDARD
Chem. Eng. News 52 (49): 7 (Dec. 9, 1974)

Arguing that industry cannot possibly acquire the number of respirators needed to comply with proposed VC standard, the Society of the Plastics Industry has asked for a court stay of the VC occupational exposure standard, which is likely to be effective 1 Jan. 1975.

VINYL CHLORIDE

See: 9-0001, Acrylonitrile

See also: 9-0054, General Information

Anon

IN THE MEDIUM IS THE MESSAGE

Science News 106 (22): 342 (Nov. 30, 1974)

Blacklight (near-ultraviolet, 3,000-4,200 angstroms) can kill human, mouse and hamster cells in tissue culture because of a toxic photoproduct formed during irradiation, reports biologists R.J. Wang, J.D. Stoien and F. Landa. The photoproduct is apparently formed in the culture medium rather than within the cells. Irradiation of the tissue-culture medium, Dulbecco's modified Eagle's medium, with near-UV rays from a blacklight or visible fluorescent light source yields toxic photoproducts. These toxins, formed only when the vitamin riboflavin and the amino acids tryptophan or tyrosine are present in the medium, will kill unexposed mammalian cells in the irradiated medium. Although the structure and mode of lethal action of the toxins are not known, Wang et al believe that riboflavin absorbs light energy and transfers it to one of the amino acids, which is then involved in toxin formation. Warning is expressed about ingestion of large amounts of riboflavin or unnecessary exposure to near-U.V. pending more information on the toxicogenic, mutagenic and carcinogenic effects of the light.

9-0043
GENERAL INFORMATION

Anon

ZIRCONIUM DEODORANTS MAY POSE HEALTH RISK

Chem. Eng. News 52 (49): 4-5 (Dec. 9, 1974)

Antiperspirant sprays containing zirconium chlorhydrate contain aerosol particles that could reach a user's lungs through breathing and could induce lung granulomas, which might lead to tumor growth, according to a panel study by FDA. Products containing the compound are Procter and Gamble's Sure and Secret, and Carter Wallace's new Arrid Double X. Procter and Gamble refutes the claim, stating that the company's extensive monkey inhalation tests with its two products produced no evidence of lung-related problems.

Previously, Gillette withdrew several similar products from the market after tests showed mild inflammation in the lungs of monkeys exposed to them. In the 1950's, zirconium compounds in stick deodorants and poison ivy remedies caused skin granulomas in users.

Campbell, T. Colin and Stolooff, Leonard
IMPLICATION OF MYCOTOXINS FOR HUMAN HEALTH
J. Agr. Food Chem. 22 (6): 1006-15 (Nov.- Dec.1974)

Concern about the potential toxicity of aflatoxins was for a long time restricted to the veterinary literature because most humans avoid moldy food. However, there have been a few cases of acute mycotoxicoses in humans. Because there have been indications that aflatoxin ingestion could cause liver cancer, this review considers their potential hazard to humans via food, covering comparative metabolism studies, primate studies, inadvertent incidents, and epidemiological studies. Some mention is made of other mycotoxins (e.g., patulin, penicillic acid, tricothecenes, luteoskyrin, and citrinin), which could be harmful via chronic ingestion.

Drivas, Peter J. and Shair, Fredrick H.
A TRACER STUDY OF POLLUTANT TRANSPORT AND DISPERSION IN THE LOS ANGELES AREA
Atmos. Environ. 8 (11): 1155-63 (Nov. 1974)

Sulfur hexafluoride was used as a tracer in a large-scale test to characterize the dispersive power of the atmosphere. Released from over Anaheim, California, dispersion data well above the minimum detectable concentration limits was obtained in 5 nearby communities up to 124 km away.

Because sulfur hexafluoride is non-toxic and the described test was relatively inexpensive, this compound seems to be ideal for studying the transport and dispersion of pollutants over urban areas.

Neubert, Diether
THE TOXICOLOGICAL EVALUATION OF MUTAGENIC EVENTS
Mutat. Res. 25 (2): 145-57 (Nov. 1974)

The difficulties in extrapolating experimental findings in animals to man, the dose-response relationships to be anticipated in mutagenicity, and special problems associated with mutagenic-toxicological evaluations are summarized.

There is, at present, no reliable, sensitive mammalian screening system that meets the toxicological demands for routine testing of mutagenicity. Consequently, basic research, rather than large-scale screening of potential mutagens with inadequate methods, should be stressed. Some doubt is cast on the reality of the mutagen hazard to man, and it is suggested that the general population should be protected from exposure to environmental hazards and from the unnecessary prescription of drugs, unless test systems are available to permit effective prevention of disaster.

Uehleke, H.
THE FORMATION AND KINETICS OF KINETICS OF REACTIVE DRUG METABOLITES IN MAMMALS
Mutat. Res. 25 (2): 159-167 (1974)

An overview on aspects of kinetics and properties of reactive drug metabolites in relation to mutagenesis, covering mechanisms of microsomal drug biotransformation, reactivity and mutagenic effects, and the cellular kinetics of drugs and their metabolites.

Dialkylhydrazines are among various carcinogens that produce tumors at a distinct location independent of the route of application, indicating that metabolism plays an important role in their action. Halothane and 2-naphthylamine are two of the compounds mentioned in the discussion of reactivity and mutagenic effects.

Anon

PARTICULATES IN SMOKE FROM CHLORINATED POLYMERICS. . .

Chem. Eng. News 52 (49): 16 (Dec. 9, 1974)

Another hazard of pollution is pulmonary edema resulting from the deposition of hydrogen chloride gas in the lung. One source of HCl is the smoke from chlorinated polymerics. Particulates in that smoke, according to Naval Research Lab. scientists, can transport HCl, which if deposited on soot and water particles under 3 micrometers in size can reach the lung.

GENERAL INFORMATION

Anon

A NEW CLASS OF MITICIDES HAS BEEN DISCOVERED BY ZOECON CORPORATION
Chem. Eng. News 52 (49): 16 (Dec. 9, 1974)

Zoecon Corp. announces a new class of miticides said to be nonpersistent in the environment as well as nontoxic to higher animals. One of these compounds, identified as ZR-856 (hexadecyl cyclopropanecarboxylate), is being readied for commercial development.

GENERAL INFORMATION

Anon

EXPOSURE TO PHOTOCHEMICAL OXIDANTS. . .
Environ. Sci. Technol. 8 (13): 1058 (Dec. 1974)

Physiological dysfunction and inability to perform normal activities are potential hazards of exposure to 0.37-0.50 ppm of photochemical oxidants, according to the California Air Resources Board.

Some healthy men exposed to the amount of ozone that might occur during a smog episode experienced decreased pulmonary function, oxidation changes in red blood cells, and other effects.

Altshuller, A.P.
OZONE LEVELS (Letter to Editor)
Chem. Eng. News 52 (49): 3 (Dec. 9, 1974)

Commenting on recent article indicating power plants as a source of ozone, the author states the ozone levels above national standards occur throughout U.S. in summer months; small increments in ozone beyond 25 km in power plant plumes are insignificant versus large regional fluxes in ozone, and can be explained without the use of the completely unsubstantiated mechanism proposed by Davis.

After 25 km of transport, via dilution of the original stack gases, over 99.9% of the plume consists of dilution air. More studies needed on behavior within various types of plumes.

Innes, W.B.
OZONE LEVELS (Letter to Editor)
Chem. Eng. News 52 (49): 3 (Dec. 9, 1974)

Commenting on a recent discussion of ozone in power plant effluent gas (See: CATS 9-0052), the writer feels that the discussion indicates that power plants strategically located in and around cities could effectively help control downwind levels rather than be considered major contributors to ozone levels.

Anon

HOT SPOTS OR HOT LUNGS?

Lancet 2 (7891): 1238-9 (Nov. 23, 1974)

Brief discussion of the problems of the carcinogenic effectiveness of high local radiation doses to tissues surrounding "hot spots" of radio-isotopes, particularly ^{239}Pu , including question of reliability of conclusions in recent National Resources Defense Council Report, authored by A.R. Tamplin and T.B. Cochran. The NRDC report calls for a drastic revision of existing radiation protection standards, applicable to man's internal exposure from "insoluble alpha-emitting hot particles," but the report is apparently based on data from radiation induction of carcinoma in rat skin. Extrapolation of the results of animal experiments, in the absence of relevant data in man, can be erroneous. To date, no cases of cancer in humans have been directly attributed to plutonium exposure.

Junk, Gregor A. et al

CONTAMINATION OF WATER BY SYNTHETIC POLYMER TUBES

Environ. Sci. Technol. 8 (13): 1100-6 (Dec. 1974)

A method is described in which the use of a simple, portable extraction column permits detection down to <1 ppb of organic contaminants found in water that had flowed through tubes of polyethylene, polypropylene, PVC's, black latex, and a plastic garden hose. Gas chromatography-mass spectrometry was used to identify the contaminants.

Anon

MORE ECONOMICAL CARCINOGEN SCREENING TECHNIQUES FOR CHEMICALS

Chem. Wk. 115 (24): 57 (Dec. 11, 1974)

If mutagenicity were related to carcinogenicity, less costly carcinogenic screening tests for chemicals could be possible. Du Pont's Haskell Labs. are now working towards this end, feeling that simple tests to identify compounds for more extensive animal testing are possible because of the 80% mutation screening rates in bacteria. Current, chronic testing for one carcinogen can run to \$300,000 over as long as 3 years.

Anon

POLLUTANT "TRAVEL" MAY BRING REVISION OF CLEAN AIR STRATEGIES

Environ. Rept. 5 (14): 105-6 (Nov. 25, 1974)

According to a soon-to-be-released report ("Monitoring and Air Quality Trends Report, 1973, EPA-450-1-74-007), air pollutants such as ozone and some hydrocarbons are being transported through air, covering hundreds of miles from their urban sources to rural areas. EPA may have to completely revise current air pollution control strategies.

REGULATIONS AND STANDARDS

See: 9-0002, Arsenic

Anon

A 400,000-TONS/YEAR AMMONIA PLANT. . . .
Chem Wk. 115 (25): 17 (Dec. 18, 1974)

Monsanto's new 400,000-tons/year ammonia plant planned for Luling, LA., will use the Kellogg's design and process technology. When on-stream in late 1976, Monsanto's production of ammonium nitrate and other ammonia-based chemicals, such as acrylonitrile, will be boosted.

Anon

FOODS-SAFETY ISSUE NOW FOCUSES ON ABS AND NITRILE BARRIER MATERIALS
Mod. Plast. 51 (12): 18 (1974)

Because of "a previously unknown migration problem of acrylonitrile monomer which may be common to many food-contact articles containing acrylonitrile monomers," FDA proposes to permit food-contact use of acrylonitrile polymers and ABS for a limited time.

A three-year storage test at desert temperatures of acrylonitrile-content copolymer bottles for carbonated beverages showed that acrylonitrile monomer could be extracted up to 0.24 ppm. Although animal-feeding studies indicated a tentative no effect level of 38 ppm in the diets of animals tested, FDA made its decision on the basis of a 100-fold safety factor, setting a limit of not more than 0.3 ppm for the acrylonitrile monomer from food-contact articles. Users will have to continue toxicological studies towards establishing a no-effect migration level.

Potential new market for nitrile bottles may suffer setback.

See also: 10-0009, Flame Retardants

Ledet, A.E. et al
CLINICAL, TOXICOLOGICAL, AND PATHOLOGICAL ASPECTS OF ARSANILIC POISONING IN SWINE
Clin. Toxicol. 6: 439 (1973)

Pigs fed 1000 ppm arsanilic acid (10 times the recommended quantity) in a balanced ration continuously for up to 27 days were killed in groups of three at 2- or 3-day intervals from day 4, for autopsy and assay of tissue samples for arsenic. The highest As levels were found in the kidney and the liver, with maximal As levels reached on or before day 13 of feeding. Cutaneous hyperaemia and hyperaesthesia as well as incoordination were some of the conditions that developed. No gross lesions were noted, but there were consistent histopathological changes involving demyelination of peripheral nerves, optic nerves and optic tracts.

Additional studies showed rapid clearance of As from edible tissues: pig which developed posterior paresis on the 1000 ppm diet showed no clinical improvement when transferred to an As-free diet for 10-38 days before being killed.

[Abstr. in Food Cosmet. Toxicol. 12 (5/6): 783-4 (Oct. 1974)]

Beaudoin, Allan R.
TERATOGENICITY OF SODIUM ARSENATE IN RATS
Teratology 10 (2): 153-8 (Oct. 1974)

To study the embryolethal and teratogenic effects of arsenate, pregnant Wistar rats were injected ip with different doses of sodium arsenate at one of days 7-12 of gestation. The most susceptible period was at gestation days 8, 9, and 10 with a dose of 30 mg/kg. Soft-tissue changes noted were eye defects, exencephaly, renal agenesis, and gonadal agenesis. Also noted were skeletal abnormalities, particularly the absence in experimental fetuses of the atlas bones. The optimum teratogenic dose of arsenate in rats, 30 mg/kg, is compared to the most effective dose in hamsters, cited as 20-25 mg/kg, and in mice as 45 mg/kg.

10-0005
ARSENIC

Dept. of Trade and Industry: Laboratory of the Government Chemist
REPORT OF THE GOVERNMENT CHEMIST 1972
HMSO, London, 1973. 180 pp. £ 1.15

In the period reported, about 40% of the work of the Laboratory of the Government Chemist was related to environmental matters, largely pesticides. In the development of field tests for the determination of toxic substances in factory atmospheres, particular attention was given to the aromatic amines, 1-naphthylamine, di-(4-amino-3-chlorophenyl methane) (MOCA) and N,N-dimethylaniline and to lead. Heavy metals, particularly arsenic and cadmium, in factory fume emissions have been studied on behalf of the Alkali and Clean Air Inspectorate. [Review in: Food, Cosmet. Toxicol. 12 (5/6): 747-8 (Oct. 1974)]

10-0006
ARSENIC

Kroes, R. et al
STUDY ON THE CARCINOGENICITY OF LEAD ARSENATE AND SODIUM ARSENATE AND ON THE POSSIBLE SYNERGISTIC EFFECT OF DIETHYLNITROSAMINE
Food Cosmet. Toxicol. 12 (5/6): 671-9 (Oct. 1974)

In a study designed to determine the potential carcinogenicity of lead arsenate or sodium arsenate, alone, or in combination with diethylnitrosamine (DENA), certain rats were given a diet containing 1850 or 463 ppm of lead arsenate or 416 ppm of sodium arsenate. Other rats received the lower dose of lead arsenate or 416 ppm sodium arsenate in combination with DENA. Over the two-year period of the study, lead arsenate at the level of 1850 ppm was judged to be toxic and there were indications that it may be a weak carcinogen acting primarily on the kidneys and liver. There was no evidence that sodium arsenate at the level of 416 ppm was carcinogenic or that DENA produced any additive or synergistic effects.

ARSENIC

See also: 10-0029, Vinyl Chloride

Howard, W.P.
ASBESTOS AND HEALTH (Letter to Editor)
Nature 252 (5484): 523 (Dec. 13, 1974)

The writer, a member of Asbestos Information Committee, London, chides Peter J. Smith for choosing asbestos as an example of an ignored health problem in his recent article ("Nature," October 18). Although the number of new cases of asbestosis may be higher than in the 1950's, there has been no additional increase in the number of these cases since the 1967 peak of 168. Stringent controls imposed by the Asbestos Regulations 1969 have reduced the number of asbestosis cases to a low level and may eventually eliminate them completely.

Eisenberg, B.J. and Weil E.D.
A REVIEW OF DURABLE FLAME RETARDANTS
Text. Chem. Color. 6 (12): 23-7 (1974)

Flame retardant additives and coreactants for various textile fibers and flame retardant treatments for different fabrics are reviewed. Among the additives discussed are propoxyphosphazene for rayon; tris (2,3-dibromopropyl) phosphate for acetates; hexabromobenzene and others for polyester; and various high melting halogenated polycyclics for polyolefin fibers. Modification of acrylics with halogenated comonomers (e.g., vinyl chloride, vinylidene chloride, or vinyl bromide) imparts flame resistance.

THPC, THPOH, and Fyrol are among the flame retardant treatments available for cotton fabrics; tris (2,3-dibromopropyl) phosphate, for polyester fabrics; while systems containing titanium or zirconium salts are generally used for wood carpets and fabrics.

Apparently, additives, modification of the base polymer, and the application of finishes will remain the main routes to achieve flame retardance in fibers and fabrics.

St. Mard, Hubert H. et al
A NOVEL SYSTEM FOR PRODUCING FR FABRICS
Text. Chem. Color. 6 (12): 38-41 (1974)

To determine if flame retardant fabrics could be made by blending treated or untreated cotton with synthetic fibers, tests were made using a matrix fiber of polyvinyl alcohol and PVC and also a copolymer of acrylonitrile and vinylidene chloride (modacrylic), which were mixed with cotton treated with THPC type compounds. Evaluations were made on the basis of the oxygen index (OI) technique.

No increase in OI values was noted, except when a small amount of antimony oxide was included in the resin treatment formulations as a supplementary flame retardant.

BROMINATED BIPHENYLS

See: 10-0008, Flame Retardants

Anon

PATENT REPORT ON FLAME RETARDANTS

Text. Chem. Color. 6 (12): 50 (1974)

Available from Lexington Data Inc., Box 311, Lexington, MA, 02173, is the third annual supplement to "Patent Report on Flame Retardants." This supplement (Report No. 2-7374) is priced at \$90/copy and contains abstracts of over 400 US patents on the preparation and application of flame retardants, which issued between July 1973 and June 1974.

DiPaolo, Therese and Sandorfy, C.
FLUOROCARBON ANAESTHETICS BREAK HYDROGEN BONDS
Nature 252 (5483): 471-2 (Dec. 6, 1974)

Many fluorocarbon derivatives containing higher halogens dissociate hydrogen bonds of the N-H--N, O-H--O, S-H--S, N-H--O-C type which are similar to those in living organisms. A parallelism is noted between this property of fluorocarbons and their anesthetic potency as well as, possibly, to their interference with cell division. One observation is that if the fluorocarbon contains a hydrogen, its potency of hydrogen-bond breaking greatly increases.

Previous studies indicate that halothane, a widely used inhalation anesthetic, arrests mitosis. Because mitosis goes through several phases involving the breaking and the formation of the hydrogen bonds that keep the two parts of the nucleic acid double helix together, it may be that the fluorocarbon anesthetics interfere with cell division by perturbing or breaking hydrogen bonds around or in the helices, or in the mitotic spindle.

Anon
FLUOROCARBON BAN WOULD BE PREMATURE
Chem. Eng. News 52 (51): 12 (Dec. 23, 1974)

Witnesses from the scientific community, industry, and government before the House Subcommittee on Public Health and Environment agreed, in general, that the federal government should not immediately ban fluorocarbons, but should authorize intensive research on their effects on the earth's atmosphere. Potential effects of chlorofluorocarbons, following their breakdown by UV radiation in the stratosphere, include decomposition of stratospheric ozone. This could cause an increase in skin cancer cases, changes in the growth pattern of food crops, climatic and meteorological effects, and possible disruptions in the behavior patterns of a number of species.

Yet, the economic impact of banning fluorocarbons would be great. Industries dependent on chlorofluorocarbon production are expected to contribute over \$8 billion to the GNP in 1974, and employ about 200,000 people.

Anon

FLUOROCARBON PROPELLANT SAFETY DEMONSTRATED IN MEDICAL STUDIES
HAPPI 11 (12): 72,87 (1974)

Studies on the direct effect of fluorocarbon propellants on various parts of the body show that their "safety range is tremendous in normal use." Results of four completed studies and two research projects in progress were reported at the recent Inter-Industry Aerosol Safety Conference.

Dr. R. Stewart, Medical College of Wisconsin, reported no adverse effects on humans exposed to 1, 2 and 8 hours of varying concentrations of propellants 11 and 12. Dr. D. Blake, Johns Hopkins University found that no metabolites were formed by the gases reacting with body chemicals and reported no long-term storage of the gases in body organs or fluids. Dr. N. Flowers, Medical College of Georgia, found that fluorocarbon propellant 11 has its initial effect upon the cardiac electrical system at 140,000 ppm and irreversible effects at 180,000 ppm, highly in excess of the OSHA standard of 1000 ppm; fluorocarbon propellant 12 had no effect on the heartbeat up to 800,000 ppm. Dr. G. Laurenzi, Respiratory Disease Laboratory, found that the lung could clear both gram positive and gram negative bacteria in tests in which mice were exposed to 1000 ppm of propellants 11 and 12 and a mixture of both. Dr. R. Albert, NYU Medical Center, is studying the upper respiratory system defense mechanisms, using donkeys, and so far has found that the gases do not detrimentally affect mucociliary clearance rate. Another study at the U. of Washington Medical School, is aimed at determining the cardiorespiratory effects of the gases on cosmetologists.

10-0014
ISOCYANATES

Tanser, A.R., et al
ISOCYANATE ASTHMA: RESPIRATORY SYMPTOMS CAUSED BY DIPHENYL-METHANE DI-ISOCYANATE
Thorax 28: 596 (1973)

Although the hazards of toluene diisocyanate (TDI) in the production of polyurethane materials are well documented, less is known of the safety-in-use of diphenylmethane diisocyanate (MDI), which has been thought to be an insignificant vapor hazard because of its low volatility.

Recently, however, workers exposed to MDI in a factory producing rigid foams showed respiratory effects. Four of 57 workers developed hypersensitivity to MDI. Ten others experienced irritant effects, mainly of the respiratory tract when exposed to MDI vapor. These findings indicate that the precautions necessary, when MDI is used, should be as rigorous as those that have been applied for many years to TDI. [Abstr. in: Food Cosmet. Toxicol. 12 (5/6): 789-90 (Oct. 1974)]

10-0013
ISOCYANATES

Anon
MDI URETHANES
Mod. Plast. 51 (12): 24 (1974)

IPRC Corp., Farmingdale, NJ, announces Iporane-P, a series of urethane prepolymers based on polycaprolactone and diphenyl-methane-4,4'-diisocyanate (MDI). The six grades of Iporane-P available cure with conventional agents and reputedly resembles polyesters in mechanical strength while possessing the hydrolytic stability and low-temp flexibility of polyethers.

ISOCYANATES

See also: 10-0021, Polyurethanes
10-0022, Polyurethanes

10-0016

LIQUEFACTION AND GASIFICATION OF COAL

Alm, Alvin L.

ENERGY AND THE ENVIRONMENT: CHOICES FOR THE FUTURE
Chem. Eng. Progr. 70 (12): 15-9 (1974)

Among the alternatives to solving our energy problems, EPA includes coal gasification and liquefaction as ways of reducing sulfur emissions associated with the combustion of coal. Another alternative, oil shale, has many significant environmental impacts. Both conventional and in situ retorting processes cause air pollution even though stack gas scrubbers might alleviate some emission problems. Other problems are the magnitude of the mining operation and the generation of waste products. Spent shale, greater in volume than the original shale will be troublesome from the standpoint of disposal. It may not be feasible to revegetate the spent shale. In addition, there is the question of obtaining sufficient water for compaction and irrigation of the spent shale. Added to these problems are various economical and social issues.

10-0017

LIQUEFACTION AND GASIFICATION OF COAL

Anon

A \$6.9 MILLION CONTRACT FOR A COAL GASIFICATION PROJECT. . . .
Chem. Eng. News 52 (51): 13 (Dec. 23, 1974)

Under a \$6.9 million Office of Coal Research contract, Rockwell International, Los Angeles, will assess the feasibility of a low-Btu process for generating electricity. A planned pilot plant, based on the molten salt coal gasification method, will convert 5 tons/hr of 11,780 Btu-per-lb coal to 150 Btu-per-cu ft gas at 1800°F and 5 atm.

Anon

COMBINING COAL GASIFICATION WITH ELECTRIC POWER GENERATION. . .
Chem. Eng. News 52 (51): 13 (Dec. 23, 1974)

American Natural Gas, NYC, and Basin Electric Power, Bismarck, ND, are considering a \$1 billion project near Beulah, ND, to assess the potential savings in coal, water, and construction resulting from combining coal gasification with electric power generation. An electrical plant, using fine coal, would supply steam to a coal gasification plant, which would use coarse coal. Intake water would be shared by both plants.

10-0019
4,4'-METHYLENE BIS (2-CHLOROANILINE)
(MOCA)

Anon
URETHANES WITH DIVERSE PROPERTIES
Mod. Plast. 51 (12): 24 (1974)

From Pelron Corp., Lyons, Illinois: a new family of urethanes that cure with 4,4'-methylenebis-(2-chloroaniline) (MOCA), comprised of six prepolymers and four two-component systems. The latter, containing dissolved MOCA, can be processed at 80°F, molded at 150°F, and demolded in 20 minutes.

4,4'-METHYLENE BIS (2-CHLOROANILINE)
(MOCA)

See: 10-0005, Arsenic

See also: 10-0021, Polyurethanes

McPherson, F. et al
IN VITRO ENHANCEMENT OF HEPATIC MICROSOMAL BIPHENYL 2-HYDROXYLATION BY CARCINOGENS
Nature 252 (5483): 488-9 (Dec. 6, 1974)

Because it is not feasible to assess the carcinogenic potential of all natural and synthetic chemicals in the environment by existing in vivo methods, the authors suggest that their in vitro method might provide a basis for a preliminary screening system which, in conjunction with other such tests, might be valuable in detecting potential carcinogens. They report that the in vitro incubation of some chemically dissimilar compounds, carcinogenic to rat hepatic microsomes in the presence of NADPH, produces a selective increase in biphenyl 2-hydroxylation, but does not significantly affect biphenyl 4-hydroxylation. Non-carcinogens do not enhance either hydroxylase. Among the compounds tested were α - and β -naphthylamine. Apparently, the enhancement of the hepatic biphenyl 2-hydroxylase activity is not confined solely to hepatocarcinogens because β -naphthylamine, benz(a)pyrene and methylcholanthrene were all effective.

NAPHTHYLAMINES

See: 10-0005, Arsenic

See also: 10-0023, Trichloroethylene

Anon
OSHA-SAFE URETHANE ELASTOMER
Mod. Plast. 51 (12): 24 (1974)

According to Cal Polymers, Inc., Long Beach, California, its Calthane 1700, a 2-part filled urethane elastomer contains no TDI nor MOCA, thus eliminating concern about compliance with OSHA's safety requirements for these two compounds. Calthane 1700 is useful as a mold material for rigid urethane foam.

10-0022
POLYURETHANES
(Production)

Wood, A. Stuart
SUPPLY STATUS REPORT No. 8: POLYURETHANES
Mod. Plast. 51 (12): 60-2 (1974)

Ample new raw material capacity is going up, but supporting feed supply is still a worry to polyurethane producers faced with an expanding market. Announced capacity hikes in toluene diisocyanate (TDI) by Dow, BASF Wyandotte, Rubicon, and Mobay plus hikes in polymethylene polyphenylene isocyanate (PMPPI) by Mobay and others will up isocyanates capability to 380,000 and 250,000 metric tons, respectively, by the end of 1976. More diphenylmethane diisocyanate (MDI) seen needed for growing thermoplastic urethane markets. Automotive and TV markets will use more urethanes. Prices of raw materials are rising. Table shows 1974 and 1976 capacity for TDI and PMPPI/pure MDI for 10 producers.

POLYURETHANES

See: 10-0014, Isocyanates
10-0015, Isocyanates
10-0019, MOCA

Fallwell, William F.
CHLORINE SHORTAGE SHOWS SIGNS OF EASING
Chem. Eng. News 52 (50): 9-10 (Dec. 16, 1974)

New plants will offer additional chlorine capacity, but the gas's widespread use makes it vulnerable to an economic slowdown. Chlorinated organics are in strong demand, but a continuing drop in the automobile market could mean a drop in trichloroethylene used in metals degreasing. Demand for trichloroethylene in 1975 may not be high, but neither will be production capacity. Demand is now down for perchloroethylene used largely in dry cleaning.

Sagawa, K. et al
TRANSVERSE LESION OF SPINAL CORD AFTER ACCIDENTAL EXPOSURE TO TRICHLOROETHYLENE
Int. Arch. Arbeitsmed. 31: 257 (1973)

An industrial over-exposure to trichloroethylene (TCE) caused initial abdominal discomfort, nausea, vomiting, and a feeling of inebriation, followed by cramps in the extremities in a young female worker. Later, she experienced increasing headache, nausea, vomiting, and was not able to stand or walk unaided. After 9 months, she gained only a slight amount of mobility. Another woman involved in the exposure suffered less severe consequences. Tests showed the first woman was exposed to several thousand ppm of TCE, but the possibility exists that contaminants other than the TCE itself may have been responsible. [Abstr in: Food Cosmet. Toxicol. 12 (5/6): 795 (Oct. 1974)]

SHALE OIL EXTRACTION AND REFINING

See: 10-0016, Liquefaction and Gasification of Coal

Anon
UPDATE
Mod. Plast. 51 (12); 62 (1974)

PVC suppliers now have another worry to add to the woes associated with OSHA rulings - vinyl chloride monomer capacity shows no signs of an upswing. Nevertheless, suppliers are still planning PVC capacity growth. Robintech Inc., which went onstream in October at its new Freeport, Texas, plant (joint with Shin-Etsu Chemical, Tokyo) with an operating capacity of 100,000 tons/yr, will add 68,000 tons by 1 Jan 1976. By then, Robintech with a 282,000-ton PVC capacity should trail only Goodrich as a top U.S. producer.

Anon
VINYL CHLORIDE MONITORS MOVE ON MARKET
Chem. Eng. 52 (50): 24-5 (Dec. 16, 1974)

The instrument industry stands to gain from the current concern over vinyl chloride safety in the workplace. A wide variety of new monitoring instruments, which use various methods, are described. Evidently, VC manufacturers will be able to match instrument choice with budget in complying with new worker exposure standards.

Anon

WILL PART OF THE U.S. VINYL CHLORIDE AND PVC....
Chem. Eng. 81 (27): 21-2 (Dec. 23, 1974)

The Society of the Plastics Industry, fearful that some vinyl chloride and PVC industries may have to close by year-end because of the OSHA requirement for respiratory protective equipment, has petitioned for a court stay of the OSHA order. Although OSHA specifies the equipment as necessary only above 5 ppm, SPI feels many industries cannot reduce exposure levels under 5 ppm.

Ricci, Larry J.
CANCER QUESTIONS PLAGUE CPI
Chem. Eng. 81 (27): 28-30 (Dec. 23, 1974)

The problems and confusions facing the chemical process industries over the potential carcinogenicity of various chemicals are reviewed. Among the problems: type of evidence needed to identify a chemical carcinogen, value of premarket screening for new chemicals, and definition of an acceptable cancer risk.

These problems have been emphasized because of the report by Maltoni that VCM caused liver cancer in rats. Maltoni feels that workers in plants where the carcinogenicity of chemicals is undetected are in graver danger than VCM workers.

10-0029
VINYL CHLORIDE

Anon
CANCER WORRIES SPARK AN AGGRESSIVE NIOSH
Chem. Eng. 81 (27): 36 (Dec. 23, 1974)

NIOSH wants more stringent standards for chemicals in the workplace. Although NIOSH's mission is that of assessing health problems and recommending standards to OSHA, NIOSH is pressing for "no detectable limit" levels in new standards, e.g., arsenic. Increasing cases of industrial cancer in the last 10 or more years, additional cases of angiosarcoma from VC, and the high incidence of cancer among coke oven workers are reasons cited.

10-0030
VINYL CHLORIDE
(Production)

Anon
PROGNOSIS FOR PLASTICS: IN RECESSION, NO REGRESSION
Chem. Wk. 115 (25): 18-9 (Dec. 18, 1974)

In this overview of plastics production and uses, it is mentioned that even though industry is worried about the costs of meeting the VCM standards, producers are building polymerization units to increase PVC resins capacity by about 33%, to more than 6.5 billion lbs/yr by late 1976.

10-0031
VINYL CHLORIDE
(Uses)

Anon
SEASON'S GREETINGS!
Chem. Wk. 115 (25): 20 (Dec. 18, 1974)

Some 4-4.5 million artificial Christmas trees with PVC needles will be sold in 1974, according to American Technical Industries, the largest U.S. producer.

10-0032
VINYL CHLORIDE

Rannug, U. et al
THE MUTAGENICITY OF VINYL CHLORIDE AFTER METABOLIC ACTIVATION
Ambio 111 (5): 193-7 (1974)

The carcinogenic effects of vinyl chloride in man prompted this study to determine if mutagenicity testing would be a useful means of detecting carcinogens in the human environment, a close correlation between chemical carcinogenicity and chemical mutagenicity having been noted. Studies with *Salmonella* bacteria indicate that VC's carcinogenicity potential could have been traced via mutagenicity tests. The results show that VC in itself will not induce point mutations unless it is activated by a metabolite.

10-0033
VINYL CHLORIDE

Anon

IMPOSITION OF STRICT NEW STANDARDS FOR EXPOSURE TO VINYL CHLORIDE...
Chem. Eng. News 52 (51): 6 (Dec. 23, 1974)

The U.S. Court of Appeals, NYC, has stayed the 1 Jan. 1975 imposition of OSHA standards for exposure to vinyl chloride; will later decide on a review of the standards as requested by the Society of the Plastics Industry and producers.

10-0034
VINYL CHLORIDE

Anon

WHAT THE OSHA STANDARD ON VINYL CHLORIDE MEANS
Mod. Plast. 51 (12): 100, 102 (1974)

Reprint of a summary interpretation by the general counsel of the Society of the Plastics Industry (SPI) of the new OSHA standard for exposure to vinyl chloride, offered to help fabricators to comply with the standard. Covers need to monitor and measure, steps to take if an employee is exposed over the "action level" of 0.5 ppm or if areas are discovered to be in excess of the permissible limit, necessary signs and labels, and the need to provide employees with training in a program relating to the hazards of vinyl chloride and precautions for its safe use.

Anon

SPE RETEC REFLECTS PROCESSORS' WORRIES ABOUT VCM STANDARDS
Mod. Plant. 11 (12): 104, 106 (1974)

Manufacturers, processors, and fabricators at a Regional Technical Conference (Retec) in N.Y.C. on 31 Oct.-1 Nov. on "VCM--The Processors' Perspective" heard industry's objections and Government's view on OSHA standard for exposure levels. Industry claims low levels required are not necessary for health, technology to comply does not now exist, and there may be a loss of some 2.2 million jobs and approximately \$90 billion off GNP through forced shutdowns. EPA also plans to establish a standard for monomer and polymer plants to cut emissions by 75% in resin plants and 90% in monomer plants. This may cause an additional 4% price rise for PVC. EPA is also studying VCM's behavior in water. FDA is investigating potential hazards, as carcinogenicity, of VCM in contact with food. European developments and possible actions by industry to reduce hazards were discussed.

VINYL CHLORIDE

See: 10-0008, Flame Retardants

10-0009, Flame Retardants

VINYLDENE CHLORIDE

See: 10-0008, Flame Retardants
10-0009, Flame Retardants

Kett, Terence K. et al
RESID CONVERSION ROUTE
Chem. Eng. 81 (27): 40-1 (Dec. 23, 1974)

Process descriptions, yields and costs for various residues are discussed in this article on Flexicoking, a new process from Exxon Research and Engineering Co. This coke gasification process, which converts the usual 15-25% coke byproduct into fuel gas, allows refiners to produce readily-desulfurizable liquids and gases from vacuum residuum and other heavy feedstocks, while maintaining a clean plant environment

Burchard, John K.
THE SIGNIFICANCE OF PARTICULATE EMISSIONS
JAPCA 24 (12): 1141-2 (1974)

As air pollutants, particulates under 3 microns in diameter are now being recognized as definite health hazards because of their ability to penetrate deep into the lungs, when inhaled. Such penetration is a function of the geometry of fine particulates, in general; specific toxic effects are governed by the specific chemicals inhaled. In addition, nonrespiratory fine particles deposited in the lungs may be transported to the gastrointestinal system or to other body tissues, where they cause health problems. Industrial sources of fine particulates and methods for their control are discussed briefly.

This paper and 15 others, covering emission standards for particulates, methods of determining particulate properties, control techniques, etc., presented at a recent Symposium, sponsored by the Control Systems Laboratory of EPA and GCA/Technology Division, which was held in Boston, MA, April 8-10, 1974, are presented in this issue of JAPCA on pp. 1140-97.

Anon
OZONE TO PURIFY WATER?
Science News 106 (23): 362 (Dec. 7, 1974)

An alternative to chlorine for purifying water might be ozone, which because of its high unstability should disappear from drinking water before the water reaches the household faucet. France has depended on ozonation for water purification for more than 70 years, and Moscow is about to use the method for purifying over 33% of its water. The recent EPA announcement that chlorination of water may result in the formation of carcinogens is the reason for current U.S. concern.

Claus, G. et al
CHEMICAL CARCINOGENS IN THE ENVIRONMENT AND IN THE HUMAN DIET: CAN A THRESHOLD BE ESTABLISHED?
Food Cosmet. Toxicol. 12 (5/6): 737-46 (Oct. 1974)

Because of problems with numbers (e.g., uncertainties regarding extrapolation from findings with test animals to acceptable exposures for man plus the long induction time of effects), some investigators engaged in cancer research denote the dose-response testing procedures of classical toxicology "crude and insensitive" when applied to the carcinogenicity testing of chemicals. The authors explore the problems, discussing three proposed methods for establishing a "safe" exposure level.

Cooper, P.

MORE FACTS OF FLUORIDE

Food Cosmet. Toxicol. 12 (5/6): 757-76 (Oct. 1974)

Review of new human studies and animal experiments conducted to determine where the hazards of fluoride begin and the benefits end.

Anon

STUDIES ON DICHLORVOS

Food Cosmet. Toxicol. 12 (5/6): 765-72 (Oct. 1974)

An overview of reported studies on the safety and use of the organophosphorus pesticide, dichlorvos, concludes that on the basis of available information there is no substantial evidence of hazard to man from the use of dichlorvos in the prescribed manner.

Delfino, Joseph J.
DRINKING WATER STUDY (Letter to Editor)
Chem. Eng. News 52 (51): 3 (Dec. 23, 1974)

Commenting on the (C&EN, Nov. 18, p.44) report of EPA's finding of trace contaminants in New Orleans' drinking water, the writer cautions that thought must be given to the ways that different halogenated organics are produced in water systems. He suggests that chloroform, for instance, might be present in the drinking water because of effluent discharges upstream rather than as the result of in situ formation.

Piecuch, Peter J.
THE CHLORINATION CONTROVERSY (Editorial)
Journal WPCF 46 (12): 2637 (1974)

Detection of chlorinated hydrocarbons, including some suspected carcinogens, in drinking water has raised concern about chlorination as a disinfecting technique. The author cautions against premature banning of chlorination until the scope of the problem is more clearly defined and the impact of alternative strategies evaluated.

Ward, P.S.
CARCINOGENS COMPLICATE CHLORINE QUESTION
Journal WPCF 46 (12): 2638-40 (1974)

A new problem associated with the use of chlorine for disinfection, the problem of human health effects, crops up now that chlorinated hydrocarbons (some potential carcinogens) have been found in drinking water. Alternative disinfectants, including bromine chloride and ozone, are discussed in light of a trade-off in choice of hazard. Currently, the benefits of chlorination seem to outweigh the potential harmful effects of compounds that may be created by the process.

Liebman, Joel F.
DISPOSING OF WASTE AT SEA (Letter to Editor)
Chem. Eng. News 52 (51): 3 (Dec. 23, 1974)

Disposal of organic chlorides at sea via incineration without an alkali trap (C&EN, Oct. 14, p.5; Nov. 18, p.43) might, according to this writer, disturb the ecological balance of the ocean or release chlorine atoms into the atmosphere to cause an eventual depletion of the ozone layer.

As alternatives, he suggests incorporating an effective alkali trap on the burning platform, seeking alternative disposal methods, or re-using the organic wastes.

Singer, Philip C., Ed.

TRACE METALS AND METAL-ORGANIC INTERACTIONS IN NATURAL WATERS

Ann Arbor Science Publishers, Inc., Box 1425, Ann Arbor, Michigan 48106, 380 pp.
(1973)

The reactions of metals in water, particularly with organic compounds which have a tendency to bind metals, are discussed in the light of the potential effects of metals on the quality of natural waters. Effects on humans, toxic potential for aqueous life, and availability of nutrients for plant growth are some of the aspects considered.

Cross, Frank L., Jr.

HANDBOOK ON ENVIRONMENTAL MONITORING

Technomic Publishing Inc., 265 West State St., Westport, Conn. 06880, 242 pp.
(1974)

Up-to-date techniques for monitoring all types of pollution -- air, water, noise, solid waste, pesticides, radioactivity, and industrial hygiene -- are presented. All aspects, from the collection through the evaluation of data, are covered. Numerous diagrams, checklists, tables, and photographs contribute to effective use of the handbook.

Anon

LIQUID POLYMERS

Rubber Age 106 (12): 72 (1974)

New from B.F. Goodrich Chemical Co., Cleveland, are Hycar ATBN and VTBN, reactive liquid polymers used to modify epoxy, polyester, and urethane resins.

ATBN, a diprimary, amine terminated polybutadiene: acrylonitrile, is suggested as a curing agent for epoxy resins or for use in novel urethane prepolymer systems. VTBN, a vinyl-terminated polybutadiene: acrylonitrile, offers the possibility of less brittle polyester resin formulations and may be a useful polymer base in polymer syrup-vinylidene monomer low viscosity castable systems.

Tarumoto, T. and Freiser, H.
DETERMINATION OF TRACE LEVEL QUANTITIES OF ARSENIC VIA A NOVEL KINETIC METHOD
Anal. Chem. 47 (1): 180-2 (1975)

Having determined through the literature that arsenic accelerated the formation of the complex between osmium and thiourea, and that maximum sensitivity in analytical methods involving chemical reactions are those in which the component of interest is a catalyst rather than a stoichiometrically involved reaction, the authors developed their reported kinetic method for the determination of arsenic. They tested the method on the determination of arsenic in a human lung tissue sample.

Anon
ACUTE ARSINE POISONING
Lancet, II (7894): 1433 (Dec. 14, 1974)

Recently, 17 members of the crew of a containership became ill (4 seriously) when arsine leaked from two cylinders into the ship's hold. Arsine, a colorless, non-irritating gas with a garlic odor, is a toxic chemical. Its toxic effects; reviewed by B.A. Fowler and J.B. Weissberg [New Eng. J. Med. 29, 1171 (1974)2, involve the blood and kidneys, primarily. Exposure to only 3 ppm will cause abdominal pains accompanied by liver tenderness in from 2-24 hours. Presence in the urine, which becomes dark-red, and jaundice are indicators of arsine poisoning. Oliguric renal failure may occur in 3 days and may lead to death, if not properly treated by hemodialysis.

The arsine that leaked on the ship was apparently intended to go into the manufacture of transistors. Burning of fossil fuels containing arsenic might increase the possibility of more arsine poisoning.

*11-0004
ASBESTOS

Goldfield, Joseph and Brandt, F.E.
DUST CONTROL TECHNIQUES IN THE ASBESTOS INDUSTRY
Amer. Ind. Hyg. Ass. J. 35 (12): 799-808 (1974)

Asbestos fiber, relatively inert to some chemicals and highly temperature resistant, are widely used in industry. It is known, however, that chronic exposure to high concentrations of the fibers will cause lung disease.

Using examples from asbestos mills, asbestos-cement pipe plants and textile plants, the authors review the handling methods and the methods used to reduce or control dust exposures.

*11-0005
ASBESTOS

Hain, E. and Dalquen, P.
CATAMNESTIC STUDIES OF THE GENESIS OF MESOTHELIOMA. RETROSPECTIVE
STUDY OF 150 CASES OF MESOTHELIOMA IN HAMBURG AREA.
Int. Arch. Arbeitsmed. 33 (1): 15-37 (1974) (In German)

An examination of the death records of 251 individuals in the area of Hamburg, Germany, who died from mesothelioma, showed that 85 had an occupational exposure to asbestos dust. Of these 18 had experienced a very high degree of exposure in the related textile and insulating industries; 67 had a lesser degree of exposure in other occupations, especially ship-building. A control group (35 mesothelioma patients had worked with asbestos, 25 lived near an asbestos factory) indicated the mean age at death to be 65 years the latent period about 40 years.

It is recommended that mesothelioma be included in the planned new european list of occupational diseases. The disease can be caused by a 2-year exposure to asbestos dust; latent period is 20 years. Massive exposure might shorten these time periods.

Kaiser, Klaus L.E.
ON THE OPTICAL ACTIVITY OF POLYCHLORINATED BIPHENYLS
Environ. Pollut. (7): 97-101 (Sept. 1974)

Although the environmental contamination potential of PCB's has been recognized in recent years and numerous studies have been made on their toxicity, their synergistic effects on biota, their biological effects, and other characteristics, no studies have been conducted on their possible optical isomerism and the potential environmental hazards of any optical isomers. This qualitative, semi-quantitative study covers molecular optical isomerism of those PCB isomers expected to be stable under environmental conditions. Data are also included on the conformation, optical properties and activation energies for the racemization of 3,3'-dibromo biphenyl and 2,2'-dibromo-4,4-dicarboxy biphenyl.

Anon
OSHA STANDARD STALLED
Chem. Wk. 116 (1): 12 (Jan, 1, 1975)

Two appeals courts in Philadelphia delayed OSHA'S plans to put into effect standards for Moca [DuPont's trade name for 4,4'-methylenebis(2-chloroaniline)] and vinyl chloride, but upheld OSHA'S argument that its standards for Moca and for methylchloromethyl ether and 3,3'-dichlorobenzidine were valid.

The judges found that the "record" supported Osha's claim that these three materials were carcinogenic.

Another court, in New York, granted a stay on vinyl chloride standards, based on arguments concerning a shortage of respirators needed to meet OSHA'S low-level exposure limits.

Philpot, Charles W.
FLAME RETARDANTS AND PARTICULATE FROM WOOD FIRES
Combust. Sci. Technol. 9: 13-16 (1974)

The author questions assumptions of Depew, Mann, and Corlett in a 1972 publication in which they had apparently, among other conclusions, reported that the effects of all flame retardants are alike.

In this discussion of flame retardants and particulates (char and tar) from wood fires, Philpot reports on the flame retardant effects of diammonium phosphate (DAP) and ammonium sulfate (AS) and cites differences between their effects. Zinc chloride, and sodium dichromate are mentioned as having been found to increase and decrease, respectively, the smoke index values in tests on Douglas-fir plywood.

On p. 16, R.C. Corlett and C.A. Depew refute Philpot's interpretation of their paper.

Gailey, Phil.

MORE RESEARCH URGED ON OZONE-LOSS THEORY

The Boston Globe, p.20 (Dec. 25, 1974)

A review of the current controversy on the potential hazards of fluorocarbon depletion of ozone in the stratosphere, which cites the opinion of Dr. F.S. Rowland, University of California, that even if aerosol sprays were banned immediately enough fluorocarbons are now in the atmosphere to cause a 5 to 8% reduction in ozone over the next 10 to 15 years. This reduction could cause 8000 new cases of cancer each year in the U.S., or about 40 deaths and 1200 new skin cancer cases each year for every 1% decrease in the ozone content. Currently, 600,000 cases of skin cancer resulting in 2000 deaths, are reported each year in the U.S.

See: 11-0007, 3,3'-Dichlorobenzidine

See also: 11-0022, Polyurethanes

11-0010
LIQUEFACTION AND GASIFICATION OF COAL

Marynowski, Chester W.

PYROLYSIS OF COAL IN A FLUIDIZED BED WITH AN INDUCTION PLASMA.

Stanford Res. Inst., Final Rept. Jan. 1967-June 1968 (Nov. 1968)

OCR-40-F. (Contract DI-14-01-0001-490). PB-235 318

Possibilities of producing useful chemicals from coal in a fluidized bed when subjected to a high frequency induction field are studied. The 54-page narrative report (plus a 200-page bibliography) describing the equipment and step-by-step procedures in considerable detail could be useful to others investigating induction plasmas. The coal processing bibliography containing more than 2,000 entries could be useful in many areas of coal research.

Topics covered include coal gasification, coal tars, shale oil, cost estimates.

[Abstract in: Govt. Repts. Announc. 74 (23): 58 (Nov. 15, 1974)]

11-0011
LIQUEFACTION AND GASIFICATION OF COAL

Anon

ENGINEERING STUDY AND TECHNICAL EVALUATION OF THE BITUMINOUS COAL RESEARCH, INC. TWO-STAGE SUPER PRESSURE GASIFICATION PROCESS.

Air Products and Chemicals, Inc., Allentown, Pa. Final Rept. June-Oct. 1970 (Mar. 1971). OCR-60-F. (Contract DI-14-32-0001-1204). PB-235 778

An engineering study and technical evaluation of the Two Stage Super Pressure Gasification Process being developed by Bituminous Coal Research, Incorporated (BCR) is discussed. The process produces synthetic natural gas with a high methane content from coal, steam, and oxygen. A preliminary process design to produce 250 MMSCFD of pipeline gas from a projected full-scale commercial plant at a mine mouth site in Western Kentucky is developed and fixed and working capital costs for the plant design and the cost of gas produced by it are estimated.

[Abstr. in: Govt. Repts. Announc. 74 (23): 59 (Nov. 15, 1974)]

11-0012
LIQUEFACTION AND GASIFICATION OF COAL

O'Hara, J.B. et al
ENVIRONMENTAL FACTORS IN COAL LIQUEFACTION PLANT DESIGN
Parsons (Ralph M.) Co., Los Angeles, Calif. 14 May 1974. OCR-82-INT-3.
(Contract DI-14-32-0001-1234). PB-235 802

Environmental factors will play an important role in design and operation of coal liquefaction plants. Such plants are a major national goal and the first large units could be built during this decade. Proposed treatment methods are discussed for solid, liquid, and gaseous effluents based on a preliminary liquefaction plant design. An approach to noise control procedures designed to satisfy requirements of the Occupational Health and Safety Act is also described in this report.

[Abstr. in: Govt. Repts. Announc. 74 (23): 59 (Nov. 15, 1974)]

11-0013
LIQUEFACTION AND GASIFICATION OF COAL

Goodridge, Edward R.
AMERICAN GASIFICATION PROCESSES INCH CLOSER TO SUCCESS
Coal Age 79 (12): 60-5 (1974)

This year's AGA/OCR symposium reviewed the status -and problems- of the many processes in the coal-to-gas race, labeling as the four most promising the CO₂ Acceptor Process, the Hygas program, Project COED, and the Battelle/Union Carbide process. Progress is also noted: the liquid-phase methanation process (LPM) at Chem Systems, Inc., the fluidized-bed methanation work at Bituminous Coal Research, and in-situ underground coal gasification by the Bureau of Mines.

11-0014
LIQUEFACTION AND GASIFICATION OF COAL

Waterman, W.W.
SURVEY OF THE TECHNIQUES OF COAL CONVERSION
Energie & Tech. 26: 99-103 (Apr. 1974) (In German)

Review covers the processing conditions and resulting products from known one or two-stage coal gasification methods and evaluates their prospects. The developers of special gasification processes are discussed and their methods reviewed. Additional discussion covers coal pyrolysis, coal liquefaction, and the possibility of combining two or more coal conversion processes.

[Abstr. in: Combustion 46 (6): 40 (Dec. 1974)]

11-0015
LIQUEFACTION AND GASIFICATION OF COAL

Anon
A PROCESS THAT WILL TURN COAL INTO LOW-Btu GAS. . . .
Chem. Wk. 116 (1): 15 (Jan. 1, 1975)

Office of Coal Research contracts for development of a process for converting coal to low-Btu gas include a \$20.6 million award to Combustion Engineering for a 4-year project for a 5-tons/year pilot plant. Combinations of the company's gasification process with electric power production are expected to yield gas ranging from 150 to 450 Btu/cu ft. Another award, \$6.9 million, went to Rockwell International for a molten-salt gasification pilot plant expected to convert 5 tons/hour of coal into an environmentally-clean 150-Btu/cu ft. gas.

LIQUEFACTION AND GASIFICATION OF COAL

Aarons, Leory F.

THERE'S COAL IN WYOMING AND THE RUSH IS ON

Boston Globe, p.44 (Dec. 23, 1974)

Gillette, Wyoming, in the Powder River Basin which sits on about 22 billion tons of coal, is gearing up for an economic boom. Planned, among other things, are construction of 10 to 13 coal mines and, possibly, two coal gasification plants. The potential environmental impact is being considered. Currently, ARCO, Atlantic Richfield is conducting a large-scale ecological study of the mining sites.

4,4'-METHYLENEBIS(2-CHLOROANILINE)
(MOCA)

See: 11-0007, 3,3'-Dichlorobenzidine

11-0017
MODEL ECOSYSTEMS

Anon

ECOSYSTEMS/MANAGEMENT

Environ. Rept. 5 (16): 128 (Dec. 20, 1974)

"Proceedings of the First International Congress of Ecology," held at The Hague, The Netherlands, 8-14 Sept. 1974, contain 98 abstracts and papers covering ecosystems — their nature, functions, and management. For information, write: Pudoc, P.O. Box 4, Wageningen, The Netherlands.

11-0018
MODEL ECOSYSTEMS

Anon

TRACE CONTAMINANTS

Environ. Rept. 5 (16): 128 (Dec. 20, 1974)

Papers presented at the First National Science Foundation Annual Trace Contaminants Conference, 8-10 Aug. 1973, have been published as a 775-page report, "Report CONF-730802," available from NTIS, U.S. Dept. of Commerce, Springfield, Va. 22161 or through AEC/contractor channels. Coverage includes transport modeling, environmental distribution, etc.

Archer, Wesley L.

SELECTING ALTERNATIVE CHLORINATED SOLVENTS

Metal Progr. 106 (5): 133, 134, 136, 138, 140, 142, 144, 146 (Oct. 1974)

EPA regulations are forcing metal cleaners to substitute "exempt" solvents - methylene chloride, 1,1,1-trichloroethane, and perchloroethylene - for trichloroethylene in vapor degreasing applications.

Item reviews OSHA standards for chlorinated hydrocarbons, properties of the solvents, human response to solvent vapors, and use statistics.

Mohr, Ulrich et al
URETHAN AS A CARCINOGEN FOR THE EUROPEAN HAMSTER
J. Nat. Cancer Inst. 53 (5): 1359-61 (Nov. 1974)

Development of neoplasms in different body regions and at the site of injection in European hamsters, administered 0.2, 0.1, or 0.05 of the mean lethal dose of urethan, intraperitoneally, once/week for life, confirms the multipotential carcinogenicity of this compound. An unusual result was the development in 10% of the treated animals of adrenal pheochromocytomas, a type of tumor not found in other animals tested with urethan.

Robbins, W. Paul
ENVIRONMENTAL ASSESSMENT PACER FOAM INSTALLATION
Air Force Packaging Evaluation Agency, WPAFB, Ohio. (July 1974)
Rept. No. DSPS-74. AD-784 811

This report evaluates the impact on the environment of an Air Force Polyurethane foam-in-place packaging concept - nicknamed PACER FOAM. The PACER FOAM concept is described in terms of mixing and dispensing equipment, ventilation equipment, and chemical foam components. Assessments are made relative to toxicogenic hazards to personnel, and the impact of gaseous and solid pollutants on the environment and solid waste disposal system. It is concluded that all endogenous variables associated with PACER FOAM operations can be controlled to meet federal, state, and local regulations.

[Abstract in: Govt. Repts. Announc. 74 (23): 124 (Nov. 15, 1974)]

Burnett, Ronald D. and Diamond, Philip
INDUSTRIAL HYGIENE EVALUATION OF SPRAY APPLICATIONS OF POLYURETHANE COATINGS
Environmental Health Lab., McClellan AFB, Calif. (Nov. 1973)
Rept. No. EHL-M-73 M-10. AD-784 843

The report presents the results of the industrial hygiene evaluations conducted in the aircraft painting facility (Bldg. 692) at McClellan AFB, California. The building is a large hangar type structure specifically designed for spray painting aircraft. The building has a downdraft ventilation system with air being supplied through numerous ceiling diffusers and exhausted through floor grills. Painters' exposures or potential exposures to airborne concentrations of organic solvent vapors, hexamethylene diisocyanate (HMDI), toluene diisocyanate, and particulates were determined. The highest exposures to solvent vapors occurred during the cleaning of aircraft surfaces with solvent soaked rags. HMDI was the only contaminant generated in excessive concentrations during the spray painting operations. The adequacy of protective clothing and building ventilation was also studied.

[Abstr. in: Govt. Repts. Announc. 74 (23): 48 (Nov. 15, 1974)]

See: 11-0001, Acrylonitrile

TRICHLOROETHYLENE

See: 11-0019, Perchloroethylene

Anon

STATE OFFICIALS HOLD PRE-DESIGN CONFERENCE WITH OIL SHALE PROCESSING COMPANIES
Utah Environ. News 2 (11): 1,4 (1974)

Two 13,000 acre tracts of oil shale land in Utah have been leased from the Federal government by Sun Oil Co., Phillips Petroleum Co., and White River Shale Oil Co. The companies plan to develop an oil shale mining and processing operation but are conducting a joint environmental program before taking the first development steps.

Factors under consideration for disposal of an estimated 650 million cubic yards of waste material are leachate control, surface drainage control, vegetation restoration and area rehabilitation.

SHALE OIL EXTRACTION AND REFINING

See: 11-0010, Liquefaction and Gasification of Coal

11-0024
VINYL CHLORIDE

Anon
SPECIAL NON-POLLUTING PVC RESIN
Eur. Plastics News 1 (5): 23 (Sept. 1974)

Nippon Zeon, Tokyo, announces FR601, a non-polluting PVC type resin developed from its previously announced FR602, a non-pollutant polyolefin. Resembling PVC in its properties, FR601 has no toxic stabilizers or plasticizers and emits much less HCl, when ignited.

11-0025
VINYL CHLORIDE

Thomas, Louis P. et al
VINYL-CHLORIDE-INDUCED LIVER DISEASE. FROM IDIOPATHIC PORTAL
HYPERTENSION (BANTI'S SYNDROME) TO ANGIOSARCOMAS
New Eng. J. Med. 292 (1): 17-22 (1975)

Histologic examination of liver tissues and five spleens in 20 PVC workers indicated that 15 of the workers had liver angiosarcomas. Characteristic hepatic fibrosis was noted in all cases of angiosarcoma, but other researchers have reported fibrotic lesions that have not developed into angiosarcomas. A similarity to inorganic arsenical poisoning, which also causes angiosarcomas, and to idiopathic portal hypertension (Banti's syndrome) is discussed. Banti's syndrome is apparently caused not only by vinyl chloride and inorganic arsenicals but by other, unidentified, possibly environmental, chemicals.

11-0026
VINYL CHLORIDE

Carlson, Jack W. and Weinberger, Caspor W.
RESPIRATORY PROTECTION AGAINST EXPOSURE TO VINYL CHLORIDE
Fed. Register 39 (251): 45012-14 (Dec. 30, 1974)

Dept. of Interior and HEW rules for testing and description of vinyl chloride respirators.

11-0027
VINYL CHLORIDE

Anon
PLASTIC PRODUCTION/ENVIRONMENT
Environ. Rept. 5 (16): 124 (Dec. 20, 1974)

"Plastics: Resource and Environmental Profile Analyses," available from manufacturing Chemists Association, Washington, D.C. @ \$5.50, describes a new analytical method for assessing the total environmental hazards from plastics (and other products) manufacture.

Midwest Research Institute, which devised the method, has used it to trace six different plastic products (e.g., PVC bottles) from their manufacture through their use and disposal.

11-0028
VINYL CHLORIDE

Anon

NORSK HYDRO EXPECTS TO BEGIN PRODUCING PVC AGAIN. . . .
Chem. Wk. 116 (1): 25 (Jan. 1, 1975)

Norsk Hydro in Herøya, Norway, has installed autoclaves and made other changes in its 15-year-old, 60,000-metric-ton/year PVC plant in its effort to comply with Norway's new strict limits on vinyl emissions. Shut down in October 1974, the plant will resume PVC production soon with permission of an appointed medical commission. The commission has not, however, set any maximum worker exposure limits.

11-0029
VINYL CHLORIDE

Anon

DuPONT IS ABOUT TO ANNOUNCE.
Pollut. Eng. 6 (12): 15 (1974)

Expected soon from Du Pont: disclosure of a new plastic designed to compete with PVC.

VINYL CHLORIDE

See: 11-0007, 3,3'-Dichlorobenzidine

Anon
DEFEND CARBON BLACK
Rubber Age 106 (12): 68 (1974)

Refuting the claim of a New York City scientist that carbon black is a potential carcinogen, Akron-based Firestone Tire and Rubber Co., and Goodyear Tire & Rubber Co., report that no adverse health effects have appeared in any worker over the 50-year period in which carbon black has been used in the rubber industry. Both companies claim that the closed, automated systems used in tire production insure against the presence of any significant amounts of carbon black in the workplace atmosphere.

In another move, major rubber manufacturers will support the United Rubber Workers' proposed studies of possible disease causing characteristics of rubber-industry chemicals. Studies will be conducted at Harvard University and at the University of North Carolina.

Schofield, G.B.
HEALTH OF PLUTONIUM WORKERS (Letter to Editor)
LANCET II (7894): 1456 (Dec. 14, 1974)

Commenting on recent article on the plutonium "hot-particle" problem (see: CATS 9-0053), author reports inhalation is most common mode of plutonium intake and quantities deposited in deep lung will depend on particle size, which varies between 2 and 10 μ m A.D. Therefore, there should be little penetration into deep lung. Study of detailed medical information from Windecale plants shows total body and organ content of plutonium to be much less than those calculated during the life of the individual and to be below the I.C.R.P. recommended maximum levels.

Anon

PLUTONIUM SAFETY DEBATE

Environ. Rept. 5 (16): 21-4 (Dec. 20, 1974)

EPA hearing covers pros and cons of potential safety hazards of plutonium and related transuranium elements. AEC plans to hold hearings on the use of mixed uranium and plutonium oxide fuels in light-water power reactors.

Anon

MAJOR ADVANCES ARE BEING MADE IN DEVELOPING INSTRUMENTATION.....

Pollut. Eng. 6 (12): 15 (1974)

New, environmentally-related instrumentation includes a portable, electrochemical flux monitor from the National Bureau of Standards. The new monitor is capable of measuring chlorine in sea water, fresh water and wastewater down to the ppb level. A new x-ray fluorescence system designed by the Naval Research Lab to analyze trace metals in water detects all elements in one spectrum sweep, thus saving time compared to atomic absorption spectroscopy.

Anon

THE EFFECT OF OIL CONTAMINATION ON HUMAN HEALTH. . . .
Chem. Eng. News 53 (1): 12 (Jan. 6, 1975)

According to the NAS study, "Petroleum in the Marine Environment," man is in no more, and perhaps less, danger from eating seafood contaminated with oil or various cancer-causing chemicals than he is from other exposures to carcinogens.

12-0001
ARSENIC

Anon

IN 1975, THE MILLS OF OSHA WILL GRIND MORE SLOWLY
Chem. Wk. 16 (3): 14-5 (Jan. 15, 1975)

OSHA anticipates a slowdown in issuing health and safety regulations and in inspecting plants to monitor compliance because of industry's and/or labor's challenge of the new rules. The challenge is based on costs required for equipment and process changes needed to comply with OSHA regulations and on objections to OSHA's basis for labeling some chemicals hazardous.

An appeals court has ordered OSHA to re-do its standard on MOCA, an alleged carcinogen; the Synthetic Organic Chemical Manufacturers Assn. is challenging OSHA's ruling on ethyleneimine, also listed as a carcinogen; and other agencies are challenging the vinyl chloride standard. Nevertheless, Congress is allotting more money to OSHA and NIOSH. In addition, OSHA is preparing standards for numerous chemicals, including asbestos, tolylene diisocyanates, trichloroethylene, inorganic arsenic, and has promulgated some standards on an emergency basis. Included among the latter are 2-acetylaminofluorene, benzidine and its salts, 3,3'-dichlorobenzidine and its salts, α - and β -naphthylamine, β -propiolactone, methylchloromethyl ether, 4,4'-methylene-bis(2-chloroaniline) (MOCA), ethyleneimine, and vinyl chloride.

12-0002
ARSENIC

Landrigan, Philip J. et al
EPIDEMIC LEAD ABSORPTION NEAR AN ORE SMELTER
New England J. Med. 292 (3): 123-9 (Jan. 16, 1975)

Although this paper concentrates on the amount and effects of particulate lead in dust and air near a large ore smelter in Texas, measurements were made of zinc, cadmium and arsenic concentrations of air-borne particulates in addition to the lead particulates.

The smelter emitted 1 metric ton of arsenic into the atmosphere through its stacks in the years 1969 through 1971, compared to 1012 metric tons of lead and 11 metric tons of cadmium.

Woodin, A.M.

ACTION OF ORGANOPHOSPHORUS COMPOUNDS ON THE p-NITROPHENYL PHOSPHATASE
OF MEMBRANES FROM RABBIT AND GUINEA PIG POLYMORPHONUCLEAR LEUCOCYTES
Exptl. Cell Res. 89 (1): 15-22 (Nov. 1974)

The organophosphorus compounds, diisopropylphosphorofluoridate (DIPF), triisopropyl phosphate (DIP), diisopropylethyl phosphate (DEP), triethyl phosphate, and trimethyl phosphate were found to modify the p-nitrophenyl phosphatase activity of the leukocyte membrane in rabbits and guinea pigs. The action of the organophosphorous compounds is shown to differ from that of the detergent lubrol and also from that of sulphydryl reagents. Differences were also noted in the p-nitrophenyl phosphatases of the two species examined.

Anon

A/C PIPE GETS CLEAN BILL OF HEALTH

Water and Wastes Eng. 11: 10 (Nov. 1974)

Asbestos-cement pipe for water, properly used, is not a health hazard by reason of ingestion of asbestos fibers, according to a study sponsored by the A/C Pipe Producers Association. The report discusses the reported carcinogenic effects of asbestos, but points out that there is a question that asbestos is the cause of peritoneal mesothelioma reported in most occupational groups exposed to air-borne asbestos.

The study recommends the development of a standard analytical method to identify and quantify asbestos fibers in water, the study of various pipe systems to determine the effect of asbestos content on soil and water, and epidemiological studies to determine the effects of asbestos-cement pipe systems on humans plus animal studies on the health aspects of asbestos fibers and their possible carcinogenic effects.

ASBESTOS

See: 12-0001, Arsenic

BENZIDINE

See: 12-0001, Arsenic

3,3'-DICHLOROBENZIDINE

See: 12-0001, Arsenic

Zeller, M.V.

INSTRUMENTAL TECHNIQUES FOR ANALYZING AIR POLLUTANTS GENERATED IN TEXTILE PROCESSING

Text. Chem. Color. 7 (1): 16/33-20/37 (1975)

Although textile processing is not counted among the major air pollution sources, it does contribute a number of particulate and gaseous pollutants to the atmosphere. Atomic absorption, infrared analysis, gas chromatography, and other analytical methods used by textile processors are described. Dioxane is one of the solvents analyzed by the long path gas cell. A table lists the OSHA concentration limits and the analytical wavelength used for the IR determination of some compounds, including trichloroethylene.

ETHYLENEIMINE

See: 12-0001, Arsenic

Anon
HOW IMPURITIES AFFECT FLAME RETARDANCY
Text. Chem. Color. 7 (1): 38/21-44/27 (1975)

Impurities in flame retardants can affect the flame retardancies of the treated fabrics, according to tests reported here. Inorganic salts, for instance, can lower the flame resistance of certain P-N flame retardant cottons but can also improve the flame resistance of some borderline P-N finishes. Organic salts can also cause variations in the effectiveness of some flame retardants. Tests were conducted with various flame retardant fabrics using differential thermogravimetric analysis, differential scanning calorimetry, and electron emission spectroscopy.

Anon
ADR's 39th ANNUAL NEW PRODUCT REVIEW
Amer. Dyest. Rep. 63 (12): 21-72 (non-inclusive) (1974)

Review covers products introduced in 1974 for use by the textile wet processing industry. Twenty-six new fire (flame) retardants are identified by trade name and producer and described briefly. Four fluorescent finishes and brightening agents are likewise identified.

Sasuga, Tsuneo and Takehisa, Masaaki
VISCOELASTIC PROPERTIES OF LOW MOLECULAR WEIGHT SINTERED POLYTETRAFLUOROETHYLENE
J. Polym. Sci. (Polym. Phys. Ed.) 12 (12): 2577-8 (1974)

Factors governing the degree of crystallinity of sintered polytetrafluoroethylene (PTFE) are discussed. Having earlier reported on the viscoelastic properties of unsintered highly crystalline PTFE, the authors now describe those properties for highly crystalline PTFE sintered from low molecular weight PTFE.

Seguchi, Tadao et al
MORPHOLOGY OF POLYTETRAFLUOROETHYLENE PREPARED BY RADIATION-INDUCED EMULSION
POLYMERIZATION
J. Polym. Sci. (Polym. Phys. Ed.) 12 (12): 2567-76 (1974)

Electron microscope studies previously conducted to investigate the morphology of polytetrafluoroethylene (PTFE) have not considered the influence of molecular weight. This study, therefore, was conducted primarily to determine the relationship between morphology and molecular weight of PTFE obtained by radiation-induced emulsion polymerization.

*12-0010
FLUOROCARBONS
(New Product)

Anon

DuPONT HAS UNVEILED A NEW FLUORINATED SOLVENT. . .
Chem. Wk. 116 (3): 28 (Jan. 15, 1975)

Du Pont has filed a patent application for Freon TES, an azeotrope of trichlorotrifluoroethane, ethanol, and nitromethane. The company expects to sell the new solvent to producers of printed-circuit boards, who will use it to deflux electronic components containing reactive metals, e.g., aluminum, magnesium, and zinc.

See: 12-0001, Arsenic

Anon.

PLASTICS MARKETS ASSURE INTERMEDIATES' GROWTH
Chem. Eng. News 53 (2): 13 (Jan. 13, 1975)

Global demand for two chemicals— 1,4-butanediol and hydrazine — will grow 14% a year into the 1980's, Paris-based group predicts. Global demand for hydrazine hydrate may reach 80,000 metric tons in 1980, compared to the approximately 32,000 metric tons consumed in 1974. The market will grow rapidly, if hydrazine-based fuel cells become commercially viable.

New route to hydrazine, announced by France's Pechiney - Ugine - Kuhlmann in 1974, which uses hydrogen peroxide instead of chlorine as the oxidant, may spur higher production.

Anon
UPJOHN. . . .
Chem. Eng. 82: 138 (Jan. 6, 1975)

Upjohn Co. will soon increase its isocyanates capacity to 300 million lb/year, when its Polymer Chemicals Division, La Porte, Texas, finishes a 50% plant expansion. The \$20-million expansion is evidently going to be operable ahead of schedule.

ISOCYANATES

See: 12-0001, Arsenic

Anon

IN-SITU COAL COMBUSTION

Environ. Rept. 5 (18): 138 (Jan. 17, 1975)

Bu Mines' TPR-84, "In-Situ Combustion of Coal for Energy," enumerates various economic and safety advantages from the underground combustion of coal combined with in-situ conversion to electricity of the generated heat. One big drawback to the method, however, is the danger of serious thermal pollution effects. New techniques will be needed to control the possible air contaminants and pollutants of underground waters, as well as preventing land damage from roof collapse.

Anon

TECHNICAL AND ECONOMIC POTENTIAL. . .

Chem. Eng. News 53 (3): 25 (Jan. 20, 1975)

Office of Coal Research has awarded a \$6 million plus contract to Continental Oil's coal development division to determine the technical and economic feasibility of a zinc halide hydrocracking process for producing distillate fuels from coal. Goal is to make about 4 bbl of low-sulfur distillate fuel from a ton of coal, during the R & D part of the program. Subbituminous coals will be tried first.

LIQUEFACTION AND GASIFICATION OF COAL

See also: 12-0015, Model Ecosystems

4,4'-METHYLENEBIS(2-CHLOROANILINE)
(MOCA)

See: 12-0001, Arsenic

Wolff, Anthony
THE WORLD IN A FISHTANK
Sat. Rev., p.6 (Jan. 11, 1975)

A "model ecosystem," developed at the University of Illinois, is a small-scale true-to-life natural environment in a 20-gal. aquarium. Sorghum seeds doused with a radioactive tagged test compound are planted; caterpillars eat the sorghum leaves and their wastes then contaminate the animal and plant life in the aquarium water. As the test compound and its by-products pass through the ecosystems food chain (from algae to fish), relatively safe, biodegradable compounds break down into innocuous substances, while potentially hazardous compounds are stored, undissolved in the fatty tissues of the animals. At the end of 30 days, the aquarium is emptied, the plants and animals pulverized, and the test compound and its degradation products are identified via thin-layer chromatography.

The WHO uses the model ecosystem to test alternatives to DDT; USDA is testing the ecological effects of herbicides; and FDA plans to use it to evaluate veterinary drugs. The model ecosystem is also being used to study the by-products of coal gasification.

MODEL ECOSYSTEMS

See also: *12-0019, Phthalates

See: 12-0001, Arsenic

See: 12-0007, Flame Retardants

Inst. of Food Technologists' Expert Panel on Food Safety and Nutrition
PHTHALATES IN FOOD
Nutrition Revs. 32 (4): 126-8 (1974)

In 1972, over a billion pounds of 20 different phthalate compounds were sold as vinyl plasticizers. Phthalate-plasticized vinyl plastics for food wrappers and containers accounted for only about 18 million lbs of the total used, the most common compounds being di-2-ethylhexyl phthalate (DEHP) and dioctyl phthalate (DOP). The phthalates, highly compatible with vinyl, are fairly non-evaporating, and are not readily extracted from the plastic by substances with which they are in contact. Man may be exposed to phthalate plasticizers by skin contact, entry into bloodstream from blood stored in plastic bags, inhalation, etc. Animal studies indicate no significant toxic effects from repeated exposures except at very high doses; human experience indicates a very low toxic potential for phthalate esters.

From the above, plus the low rate of migration of plasticizers from packaging material to food, the current use of phthalates in food packaging seems to pose no health hazard to consumers.

Albro, Philip W. and Moore, Bryant
IDENTIFICATION OF THE METABOLITES OF SIMPLE PHTHALATE DIESTERS IN RAT URINE
J. Chromatography 94: 209-18 (1974)

Because phthalate ester plasticizer production is approaching 1 million tons/yr throughout the world and because these plasticizers are known to enter the human body, this study was undertaken to identify the metabolites of dimethyl, di-n-butyl, and di-n-octyl phthalates found in the urine of rats to which the compounds were given orally. Results are discussed separately for each test compound. The only detectable metabolites of dimethyl phthalate were free phthalic acid (14.4%), monomethyl phthalate (77.5%); a small amount of dimethyl phthalate was excreted intact. With the other compounds, phthalic acid was only a very minor metabolite.

Anon
PLASTICIZERS AND INTRAVENOUS THERAPY
Nutrition Revs. 31 (4): 119-20 (1973)

A phthalate plasticizer which may be toxic passes into blood stored in plastic bags. The compound was detected in human tissues and its metabolites were recovered from urine. Further study of intravenous fluids stored in plastic containers is warranted.

*12-0019
PHTHALATES

Metcalf, Robert L. et al
UPTAKE AND FATE OF di-2-ETHYLHEXYL PHTHALATE IN AQUATIC ORGANISMS AND
IN A MODEL ECOSYSTEM.
Environ. Health Perspect. No. 4: 27-34 (June 1973)

Di-2-ethylhexyl phthalate (DEHP) is the most widely used plasticizer for vinyl plastics and has all the requisite properties to be classified as an environmental micropollutant. DEHP metabolism and biomagnification in aquatic organisms and its ecological behavior in food chains of a laboratory model ecosystem were studied. Autoradiograms of the homogenized extracts of the organisms exposed to ^{14}C -DEHP at 10 ppm for 1, 2, and 7 d show DEHP is biodegraded very slowly in algae, Daphnia, mosquito larvae, snails, and clams and more rapidly in fish by hydrolysis at the ester bonds to form monoethylhexyl phthalate phthalic acid, phthalic anhydride, and a variety of polar metabolites and conjugates. However, DEHP, closely resembles DDT in rate of uptake and storage, and it obviously partitions strongly in the lipids of plants and animals and is concentrated through food chains. The biomagnification of DEHP, its teratogenic properties, and its enormous rate of production and ubiquitous use indicates the need for further study of its environmental distribution and fate. Restrictions are needed for the use and waste disposal of DEHP.

Sharry, John A.

FOAMED PLASTIC FIRE. FIRE SPREADS 430 FEET IN EIGHT MINUTES
Fire J. 69 (1): 3-6, 56 (1975)

Better identification of the fire hazard of foamed plastics is needed, judging from the results of a fire in a 430-foot tunnel being constructed at a particle accelerator facility. The fire spread along the tunnel's sprayed-in-place, closed-cell, rigid polyurethane insulation, engulfing the entire tunnel in 8 minutes. "Nonburning" and "self-extinguishing" are misleading and inadequate descriptors of some new plastics. This particular polyurethane insulation should have complied to specifications for a flame spread not in excess of 25 and smoke contribution not in excess of 50 (Steiner Tunnel Test). Although listed by the manufacturer as self-extinguishing, the user was cautioned that rigid urethane foams "burn only in the presence of flame." The ASTM D 1692-67T test used for self-extinguishing capability is a small scale lab test, which apparently does not correctly describe the fire hazard of the material.

Anon

RECYCLING POLYURETHANE FOAM. . .
Environ. Sci. Tech. 9 (1): 11 (1975)

General Motors Research Labs announces a new process for recycling polyurethane foam by breaking it down into its "chemical building blocks," which can be re-used. The waste recovery process uses steam at 600°F and 1 atm to recover the polyol from the foam and to produce diamine, leading to isocyanate.

See: 12-0001, Arsenic

TRICHLOROETHYLENE

See: 12-0001, Arsenic

See: 12-0005, Dioxane

See also: 12-0023, Vinyl Chloride

Anon

ANGIOSARCOMA DEATH AFTER LESS THAN FOUR YEARS' EXPOSURE. . .
Chem. Wk. 116 (3): 28 (Jan. 15, 1975)

After 3 years and 8 months of service as a reactor cleaner at the Barry, South Wales, plant of BP Chemicals, a 37-year-old worker died from angiosarcoma. VCM levels to which he was exposed may have been 500 ppm, or higher at times. Three other workers, out of 350 examined, show reduced liver capacity.

Jaeger, Rudolph J. et al

ACUTE HEPATIC INJURY BY VINYL CHLORIDE IN RATS PRETREATED WITH PHENOBARBITAL
Nature 252: 724-6 (Dec. 20/27, 1974)

Although vinyl chloride monomer (VCM) is widely used in industry, its biological effects are not well known. This study was conducted to determine if the potential of VCM for liver damage would be enhanced in animals (rats) pretreated with phenobarbital (PBT), an inducer of certain enzymes of the liver mixed function oxidase system (MFOS). Measurements were made of the rise in serum alanine - α - ketoglutarate transaminase (AKT) and sorbitol dehydrogenase (SHD) activity. PBT pretreatment for 7 days caused a marked enhancement of injury at the 5% level of exposure, but tests indicated that acute hepatotoxic injury was not cumulative. The authors suggest that the hepatotoxicity of VC may be caused by a mechanism similar to that of such non-symmetrically chlorinated ethylenes as trichloroethylene, since a previous study showed that induction of MFOS enzymes by pretreatment with PBT enhances the hepatotoxicity of TCE.

Lupu, A. et al
MECHANISM OF dc ELECTRICAL CONDUCTIVITY IN POLY(VINYL CHLORIDE)
J. Polym. Sci. (Polym. Phys. Ed.) 12 (12): 2399-2407 (1974)

The experimental results of a series of dc conductivity measurements performed as a function of temperature on unplasticized PVC and on PVC plasticized with dioctylphthalate indicate that the direct current in PVC is carried by electrons.

Lupu, A. and Bunget, I.
EVIDENCE OF MOLECULAR RELAXATION DERIVED FROM TRANSIENT PHENOMENA IN
POLY(VINYL CHLORIDE)
J. Polym. Sci. (Polym. Phys. Ed.) 12 (12): 2409-12 (1974)

Polymers are used as electric insulators, yet not enough is known about the mechanism of electrical conduction in polymers. Knowledge of the relaxation phenomena in polymers under various electrical fields can be helpful.

Results obtained by a transient electrical method on relaxation phenomena in PVC include a correct glass transition temperature and reasonable values for the activation energies and relaxation times.

Hanna, R.J.
CAN IT BE DONE ECONOMICALLY? (Letter to Editor)
Chem. Wk. 116 (3): 5 (Jan. 15, 1975)

Responding to a recent editorial on the feasibility of industry's meeting stringent vinyl chloride exposure levels (See: CATS 8-0044), the writer expresses fear that the industry in so doing might become less economically viable. If so, our PVC industry might not survive the competition from foreign manufacturers who will not be faced with similar high costs of construction and operations.

12-0027
VINYL CHLORIDE
(Market)

Anon
ETHYLENE FACES FLAT YEAR AS MARKETS SOFTEN
Chem. Eng. News 53 (3): 15-7 (Jan. 20, 1975)

Review of potential 1975 market for ethylene indicates possibility of minimal growth. Among major derivatives, styrene market and part of ethylene glycol market have dropped substantially. However, market demand is still strong for high-density polyethylene and major ethylene suppliers claim polyvinyl chloride market, which accounts for 15% of total ethylene demand, is still strong. Effects of new safety standards for PVC evidently not yet felt.

Anon

ROBINTECH INC. . .

Chem. Eng. 82: 139 (Jan. 6, 1975)

The Texas Air Control Board has given a permanent operating permit to the new 220-million lb/yr Shintech, Inc. polyvinyl chloride plant in Freeport, Texas. Shintech is a joint venture of Robintech Inc. and Shin-Etsu Chemical Industry Co., Ltd. of Japan.

VINYL CHLORIDE

See: 12-0001, Arsenic

See: *12-0018, Phthalates

Anon
HEALTH HAZARDS OF MONOMERS PROBED
Chem. Eng. News 53 (3): 8 (Jan. 20. 1975)

A new carcinogenic suspect is vinylidene chloride. Dow Chemical, which has been conducting animal inhalation and feeding studies with the monomer over the last five months or so, announces a report from Italy identifying vinylidene chloride as a carcinogen. The studies, conducted by Prof. P.L. Viola, Regina Elena Institute for Cancer Research in Rome, show that rats inhaling high concentrations of vinylidene chloride developed liver tumors. Viola was one of the first investigators, who implicated vinyl chloride as a liver carcinogen.

Additionally, the Manufacturing Chemists Association will administer inhalation/toxicity studies on vinylidene chloride, sponsored by 13 companies; and on styrene, sponsored by 12 firms.

Anon

MARINE POLLUTANT DATA/NOAA

Environ. Rept. 5 (17): 130 (Jan. 13, 1975)

A recent study by the National Oceanic and Atmospheric Administration contains chemical, physical, and environmental information on a number of marine pollutants, including synthetic organic chemicals, marine litter, processing wastes from metals industries, organic sludges, and medical and agricultural materials. Pollutants studied were selected on the basis of their persistence and quantity in the marine environment. "Collection of Marine Pollutant Study Data" can be inspected at the Marine and Earth Sciences Library, Environmental Science Information Center, Washington, D.C.

12-0031
GENERAL INFORMATION

Anon

OIL ENTERING OCEANS SAID TO BE INCREASING

Environ. Rept. 5 (17): 131 (Jan. 13, 1975)

NAS's study, "Petroleum in the Marine Environment," predicts an increase in the 6.1 million metric tons/yr of petroleum hydrocarbons currently finding their way into our oceans. Oil in the oceans is ending up as tar on beaches, changing benthic communities, and smothering diving birds. Although the report does not stress the danger to humans from contaminated seafoods, avoidance of such foods is cautioned, particularly since not enough is known yet about the effects on humans of contaminated seafoods.

Anon

POSSIBLE CONTAMINANT CONFUSES SACCHARIN DISPUTE
Sci. & Govt. Rpt. 5 (2): 6-7 (Jan. 15, 1975)

The National Academy of Sciences reports that saccharin cannot definitely be judged a carcinogen in rats. However, an impurity in saccharin, identified as ortho-toluenesulfonamide (OTS), may be carcinogenic. OTS is present at levels ranging from a few hundred to several thousand ppm in saccharin made by Monsanto Corp. and by a Japanese and a German company, but at only 1 or 2 ppm in the product made by Sherwin-Williams Co.

In studies made on rats in 1972 and 1973, high levels of saccharin in diets may also have contained OTS "at a detectable cancer dose."

Anon

SACCHARIN STILL ELUDES CARCINOGEN LABEL
Chem. Eng. News 53 (3): 19 (Jan. 20, 1975)

Current information is not sufficiently reliable to label saccharin a carcinogen, but additional studies should be made to determine its safety for human consumption, according to a National Academy of Sciences study, available as PB-238137/AS (\$4.75 printed; \$2.25 microfiche) from Natl. Tech. Info. Service, Springfield, VA. A saccharin impurity, ortho-toluenesulfonamide, may be a bladder carcinogen, and may have been responsible for the bladder tumors found in rats in studies using high dietary levels of commercial saccharin. Yet, such factors as stones and parasites may have caused the tumors.

Schwartz, Herbert
CHLORINE IN WATER (Letter to Editor)
Chem. Eng. News 53 (3): 5 (Jan. 20, 1975)

Responding to another letter to the editor (See: CATS 10-0042), the writer points out that chlorine added to water reacts to form hydrochloric and hypochlorous acids. Specifying how these reactant products participate in a variety of chlorinating reactions which can take place with a variety of industrial wastes, sewage, biological organisms, etc., the writer finds it easy to believe that drinking water can contain carcinogenic and toxic compounds.

Davis, Douglas D.
POWER PLANT PLUME CHEMISTRY (Letter to Editor)
Chem. Eng. News 53 (2): 3 (Jan. 13, 1975)

The author rebukes EPA's A.P. Altshuller for his comments and criticisms re power plant plume chemistry, and describes work underway at the Univ. of Maryland on formation of ozone, nitric acid, and sulfuric acid aerosols. The University approach is to collect scientific data to provide answers to problems "rather than decreasing the answer from preconceived ideas." The author criticizes environmental control strategy decisions based on minimal scientific data.